

Ms. Coll. 271

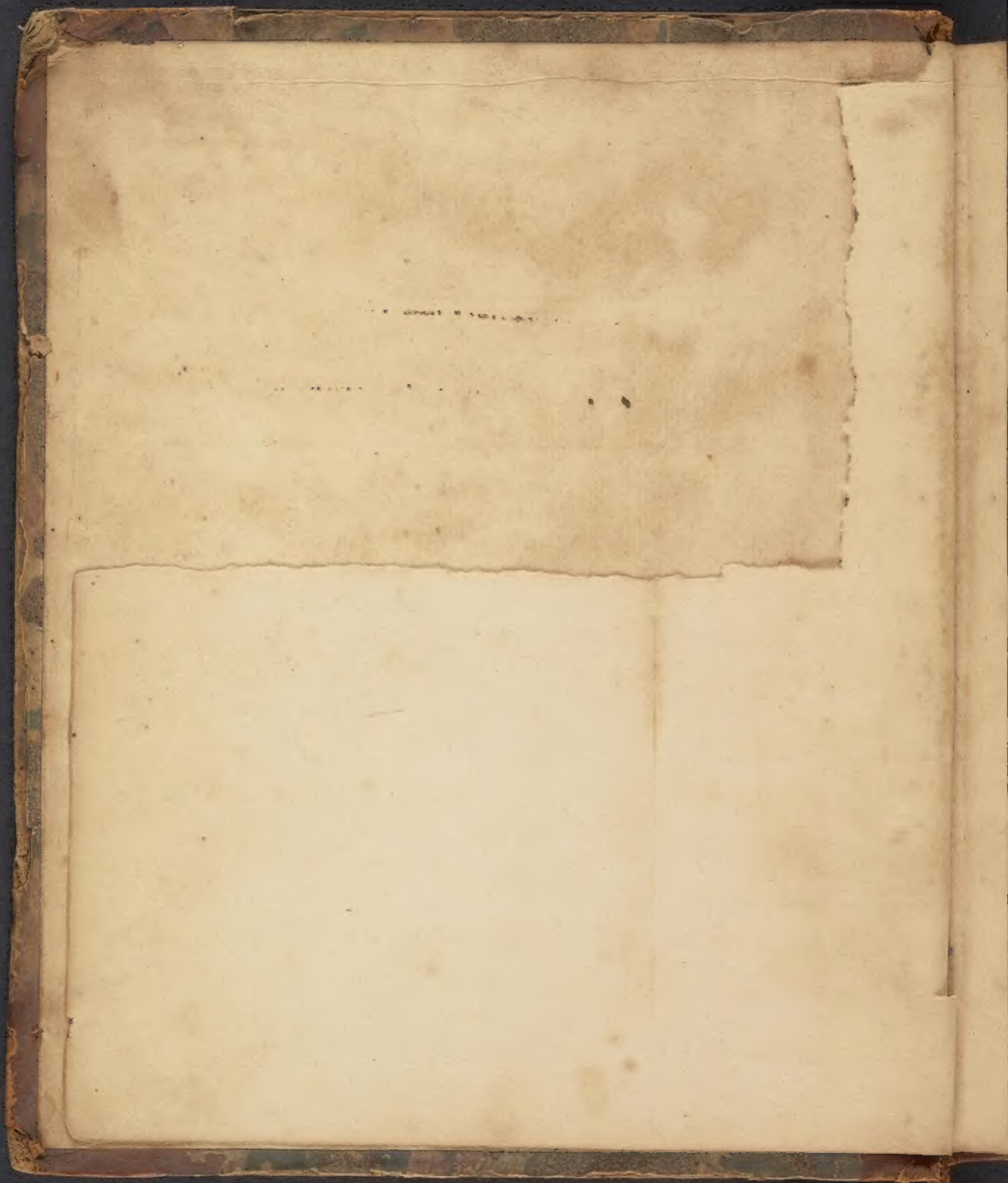
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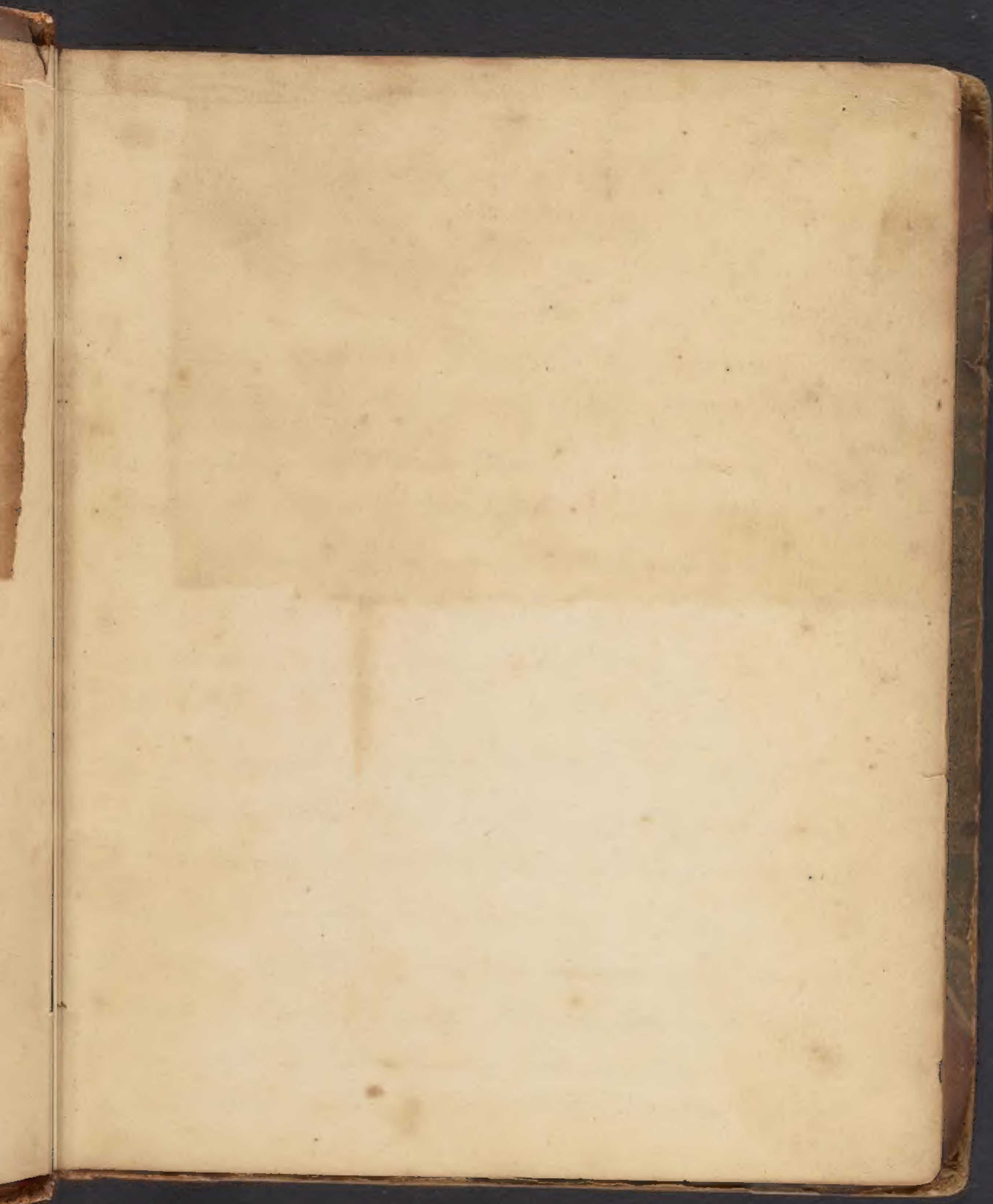
vol. 1

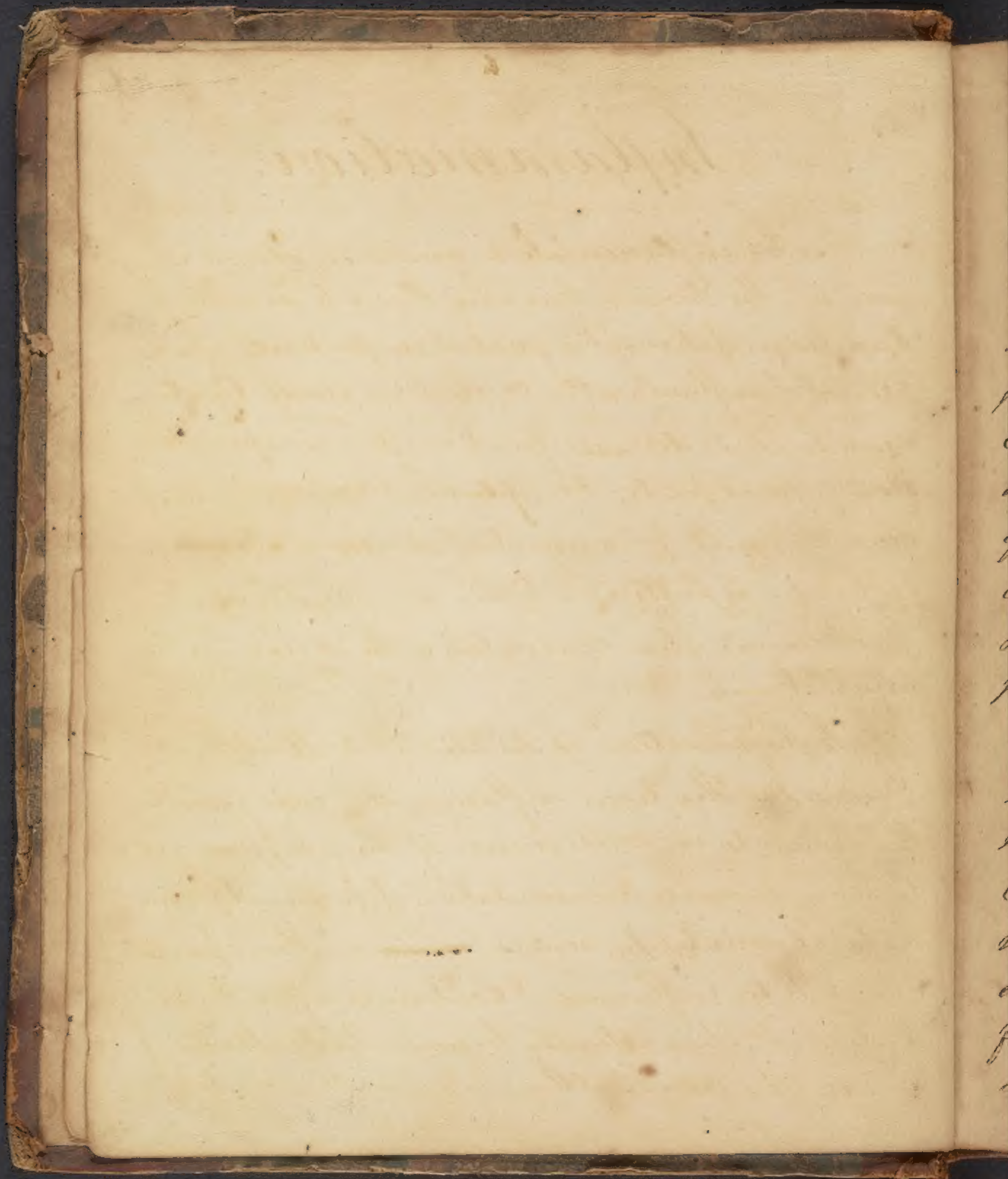
Thomas Hamilton

10th Jan 1814

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Inflammation.

As inflammation occurs in almost every case w^h the surgeon has any thing to do with, a knowledge of it is of the greatest importance. The simple act of inflammatⁿ cannot in itself be always considered as disease, for it is often necessary to restore injured parts, & unpleasant consequences frequently result from a want of it. As a large orifice in bleeding, pulling a tooth - in Hydrocele &c. It is however often connected with disease as Scrophula. Cancer &c.

Inflammation is divided into Healthy & Diseased. The term inflammatⁿ was given by the ancients in consequence of their supposing it to depend on an accumulation of fire. A preternatural sensibility occurs ~~occurs~~ in those parts about to be inflamed & continues after the inflammatⁿ has actually begun. Parts devoid of sensibility in a healthy state are often acutely

* The Proximate cause has been
the subject of much unsuccessful
disquisition. Galen, attributed it
to a superabundance of the humor
Sanguineus. Boerhaave ascribed the
proximate cause to an obstruction in the
~~last~~ small vessels, occasioned ^{sioned} by a vis-
cosity, or lentor of the blood. Cullen more
justly observes, that it is, owing ^{more} to an affec-
tion of the vessels than a change of
the fluid —

sensible in the inflamed, this is evident in Tendons, also in Bones. —

If the inflammattⁿ be in the skin, itching is generally the first symptom, preternatural redness, throbbing succeeds the functions of the part are performed with difficulty & there is a sensation of heat. —

The remote causes of inflammation are irritation applied either Chemically or Mechanically. The Chemical are heat, cold, caustic & The Mechanical stretch^g rubbing, cutting, Lacerat^g &

* Inflammattⁿ is not always consequent immediately, to the injury. Sometimes it does not occur for 8, 10, 12, or 24 hours. The same remote causes will excite different inflammattⁿ in different Constitutions. It depends more on the part acted on, than on the remote cause. Dr. Smith supposes that the same actions produce different inflammations in different parts of the body, or in parts of dissimilar structure. This opinion is highly erroneous. for what the we have after amputation of an extremity? When

Thus a person unaccustomed to labour will blister
his hands very quick

parts unite by the first intention, no inflammation takes place, as the parts are agglutinated by the coagulated blood. The effects of remote causes in producing inflammation are varied very much by habit & constitution &

Inflammation is very properly divided into several stages These are the Adhesive, Suppurative, & Ulcerative

It is called Adhesive inflammation when that degree of it only is produced w^h is necessary to restore divided parts Suppurative when the vessels secrete pus & Ulcerative when an ulcer is produced. In inflammation a supernatural quantity of blood is carried to the affected part. The diameter of the vessels is enlarged, their action is increased & they throw out coagulable lymph. This & the enlarged vessels cause the swelling. (Adhesive inflammation begins in the small vessels, the blood is not coagulated in mortified parts, but there is little action). The colour of every

+ Adhesive Inflammation the matter
secreted is coagulable lymph which forms the basis for
future membrane & vessels

Healthy inflammatⁿ is a pale red. Inflammⁿ is always attended with more or less pain. A Thermometer does not discover any increase of heat. The Coagulated lymph affords the matter of adhesion, Serum & red globules; undergoing some change in passing thro' the inflamed vessels. The effects of inflammation on the Constitution are generally according to the part affected & the quantity inflamed. Violent & extensive inflammatⁿ is always attended with a considerable degree of symptomatic fever, Blood very, pulse hard & full. The slightest injury to weak irritable people, affects the whole system in them, commonly requiring support by means of stimulants. The adhesive inflammation sometimes terminates spontaneously or by resolution after having extravasated coagulating lymph. Evacuation of serum is a sign of the resolution of inflammatⁿ as in the Brain, Hydrocephalus; Thorax, Hydrothorax;



4th This process is effected by the extravasated lymph being absorbed & the action of the vessels ceasing. In glandular parts the lymph is often not absorbed, & Abscess is often produced. A Hemorrhage is sometimes production of a cessation of inflammation. If not resolved in one of these ways, Suppuration will take place.

It sometimes is not proper to resolve inflammation for instance when it occurs in consequence of a large wound when the weather is very warm, or when a crisis to fever, or other diseases is expected; in these however there are some exceptions.

The Remedies proper to resolve inflammation are such as act upon the constitution, or such as act locally upon the affected part.

The General Remedies are low diet. Op. Purg. Mercur., & certain Neutral Salts. Combined frequently with Antimonials - Calomel. The diet sh^d be low, as boiled rice, gruel &c. The drinks sh^d be simple water, & barley water. Op. is consequently of the greatest importance



but sh^d be regulated by the violence & extent
of the inflammation & by the age & constitution
of the Patient. It acts by emptying the vessels.
Purging acts much in the same way. tho' it is
sometimes inconvenient particularly in frac-
tures, in w^h case, reliance is to be placed
on the Laxative; low diet, & gentle laxatives for
the purpose of keeping the bowels moderately
free. Rest of the affected part & of the whole
body is of the first importance, to w^h we may
add Topical V^s effected by means of Scarifi-
cations, leeches or cupping. These local reme-
dies such as topical V^s & sh^d always be pre-
ceded by general V^s, when both are necessary,
Cold applications. These are improper af-
ter they cease to feel comfortable.

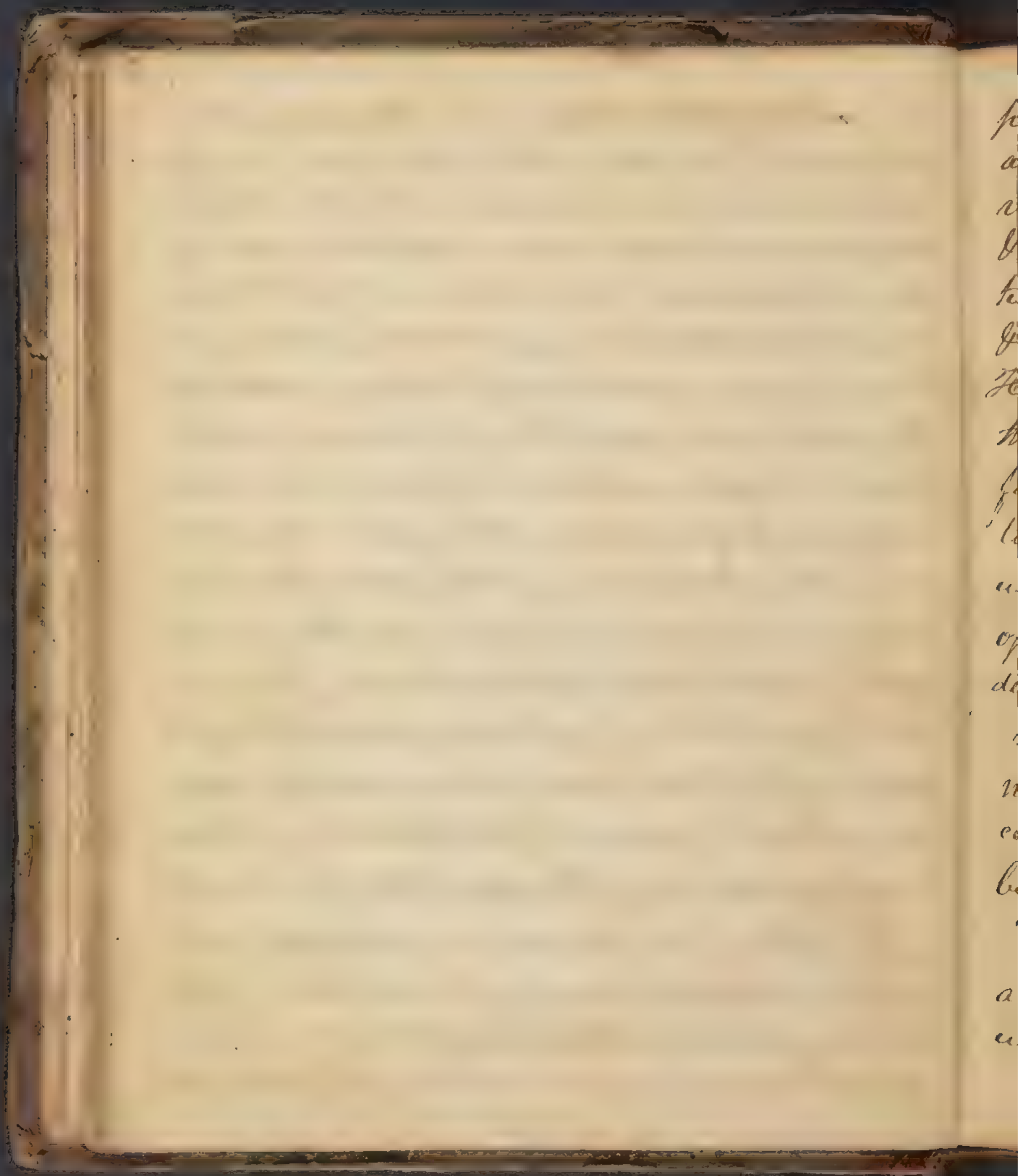
Fomentations & Poultices. These are either sim-
ple or medicated. Simple as Bread & milk poultice —
Medicated as when Sacch sat: Sal ammon &c are
added. The application of a Plester on or near
the part is often an invaluable local remedy.



Suppurative Inflammation

This takes place when the adhesion is so violent as not to admit of resolution, or when the injury received prevents the approximation of the parts. When suppuration is about to commence, the pain increases, & there is also an increase of redness, swelling & throbbing. After the formation of the pus the pain abates, the parts become softer, a fluctuation is perceived under the skin, & an abscess is formed, w^h may be defined, a circumscribed cavity containing pus. Altho' the pain is diminished after the formation of pus, yet the soreness continues. If the collection of pus be large, it is attended by rigors & shivering w^h are commonly succeeded by fever, & this is often removed by the discharge of the pus.

Symptoms of Phectic. The pulse is small, quick, & frequent. The disease assumes the form of a remittent; having exacerbations in the evening. These are ^{produced} ~~attended~~ by copious perspirations. The patient is constantly much distressed.



posed to sweat, & perspiration breaks out at any time of the day when he sleeps. This fever commonly commences with costiveness, & terminates with general debility, emaciation & Diarrhoea. The urine is high coloured & copious, depositing a laceritious sediment? Hectic fever is produced by the sympathy of the constitution with the suppurating surface. Physicians have differed with respect to the cause of this fever, it is generally attributed to the Absorption of Pus, but that this opinion is highly erroneous, we will make evident from the following observations —

1st Hectic fever very generally attends the inflammation of the vital parts, where in many instances no pus is formed. It also often attends inflammation before the formation of Pus, as white swelling &c.

2^d If this theory were true, no person with a large ulcer could escape Hectic Fever. Now we know this to be not the case: —

3^d Hectic in many instances is not produ-

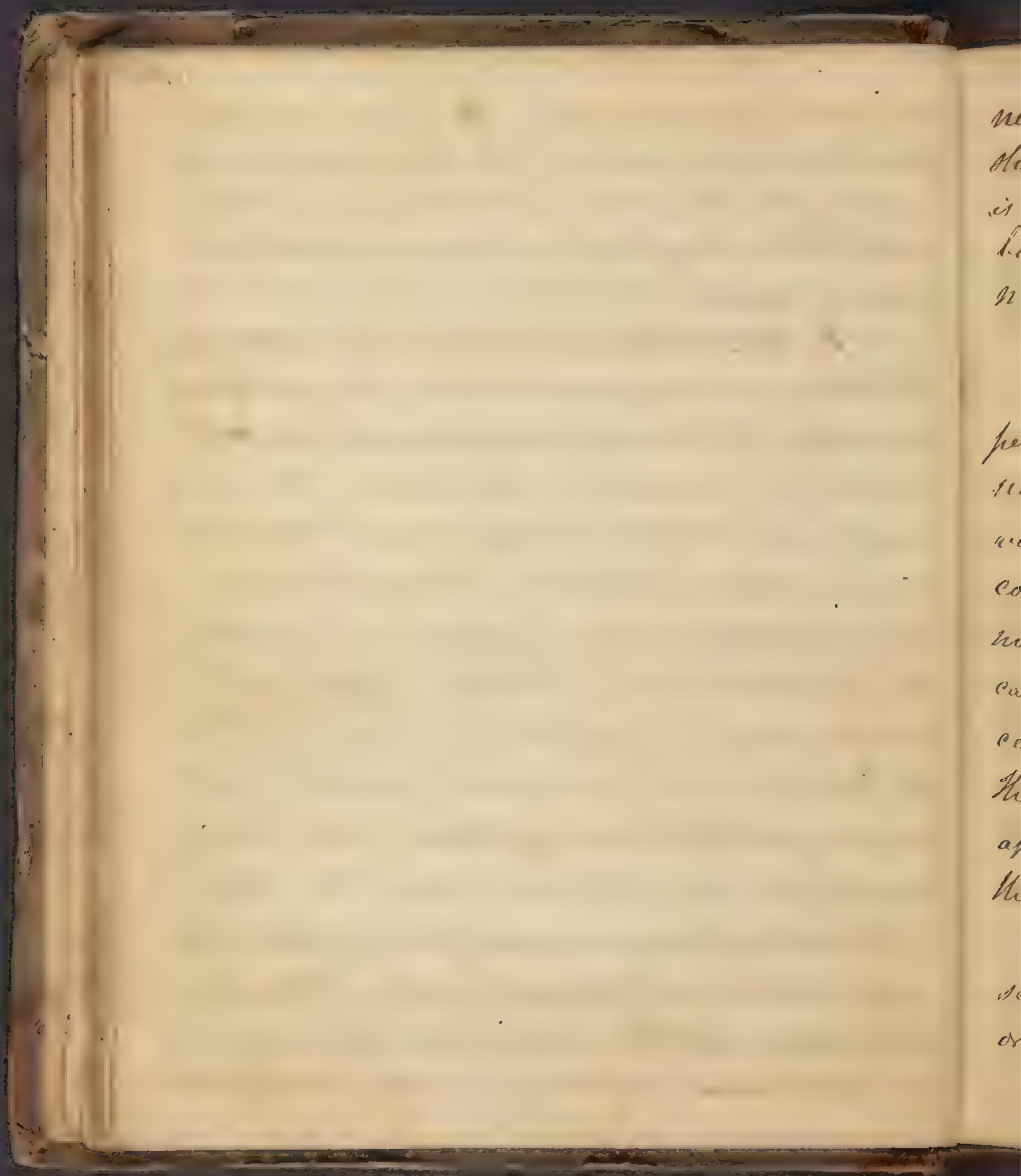


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ced altho' large quantities of pus were certainly absorbed, as in cases of large Abscess where the pus they contained were absorbed.

4th Flectic has often been relieved or cured by opening issues or blisters in different parts of the body for the seat of ulceration. Here the surface of absorption is increased, & more pus is absorbed, but instead of Flectic being produced, it is often relieved.

5th Amputation often cures Flectic, tho' the quantity of pus formed & absorbed for the stump greatly exceeds the quantity that could have been absorbed for the white swelling ulcer, or whatever produced the Flectic. When suppuration is attended with great pain, opium combined with small portions of an Emetic so as to produce a determination to the skin, will be found to afford great relief. A poultice of bread & milk or of Linseed is the best external application. After the formation of an abscess some particular part becomes soft & very promi-



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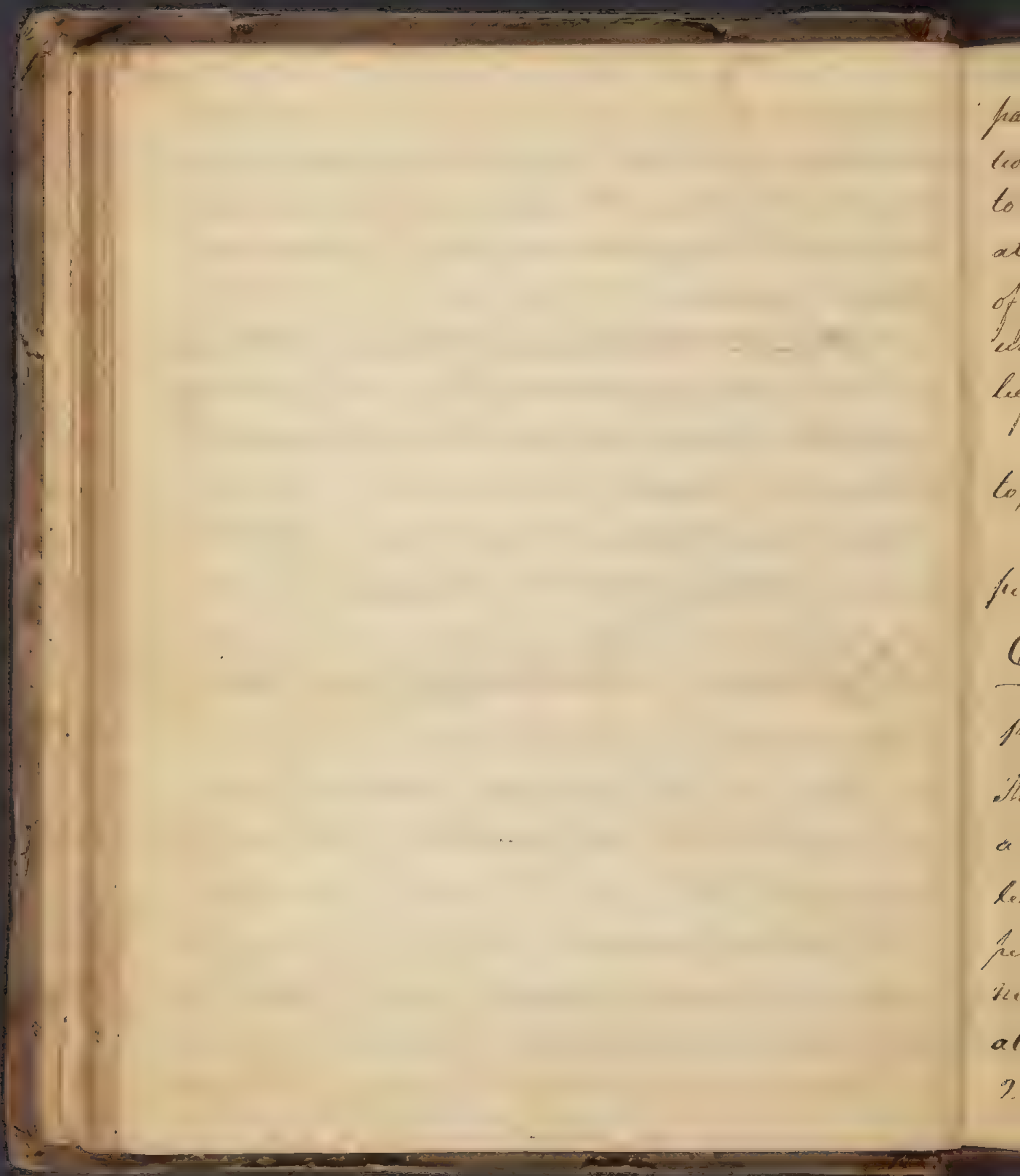
ment, (or in common language points) & in a short time after bursts. Sometimes the opening is made by some external part losing its life but if the abscess does not burst of itself, it must be opened.

Cases where an Opening is necessary.

1st When the fluctuation has been long distinctly perceptible, & there is no disposition to discharge naturally, a puncture is advisable. It is also advisable where the pus is deeply seated & thickly covered with soft parts. I (says Dr. Physick) very much doubt the existence of those external applications called drawing which are supposed to accelerate the progress of the Pus to the surface. They have, says he, gained their credit by being applied just before the spontaneous rupture of the abscess.

2^d Early openings are necessary in those abscesses which are situated in the Thorax, Abdomen or Cranium, lest they discharge internally.

3^d Collections of matter situated in different



parts where they give extreme pain, as the Collections under the tendons in Paronychia ought early to be discharged, as the discharge affords immediate relief. I have known all the symptoms of fever supervene the formation of a small abscess under the external oblique Muscle Instant relief was obtained by opening

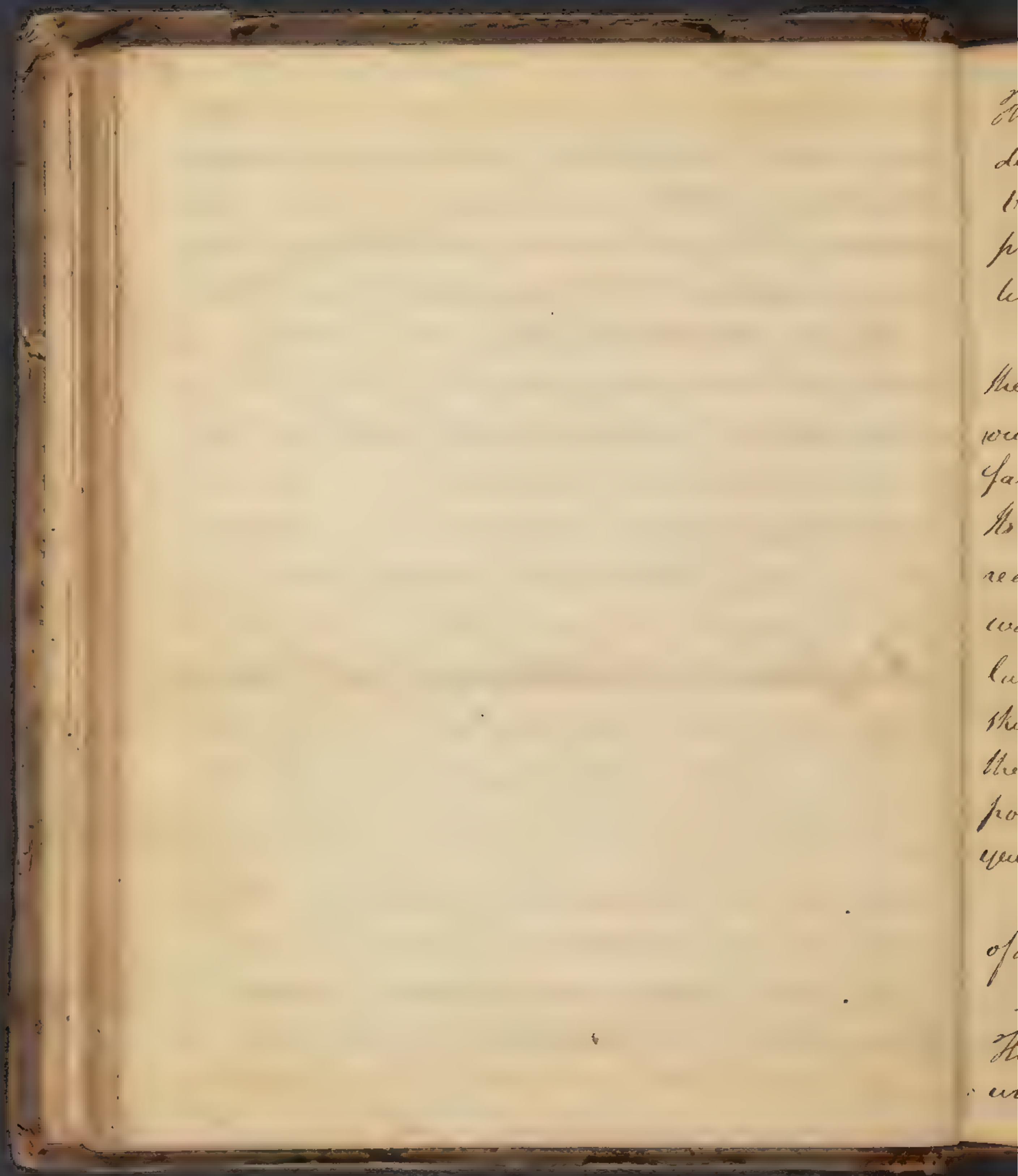
1st Abscesses on the face sh^d be opened early to prevent disfiguring scars

5th Such collections of matter as impede Respiration demand an early opening

Different Methods of open^g Abscesses

1st By incision 2^d By Caustic 3^d By Seton.

The first is the most eligible method, affording a free outlet to the matter; & being attended with least pain. The fears of the patient frequently compel us to use the Caustic - it sh^d in this case be moistened & generally drawn across the point of the abscess for 2 or 3 minutes - This is to be repeated 2 or 3 times a day until the opening be made.

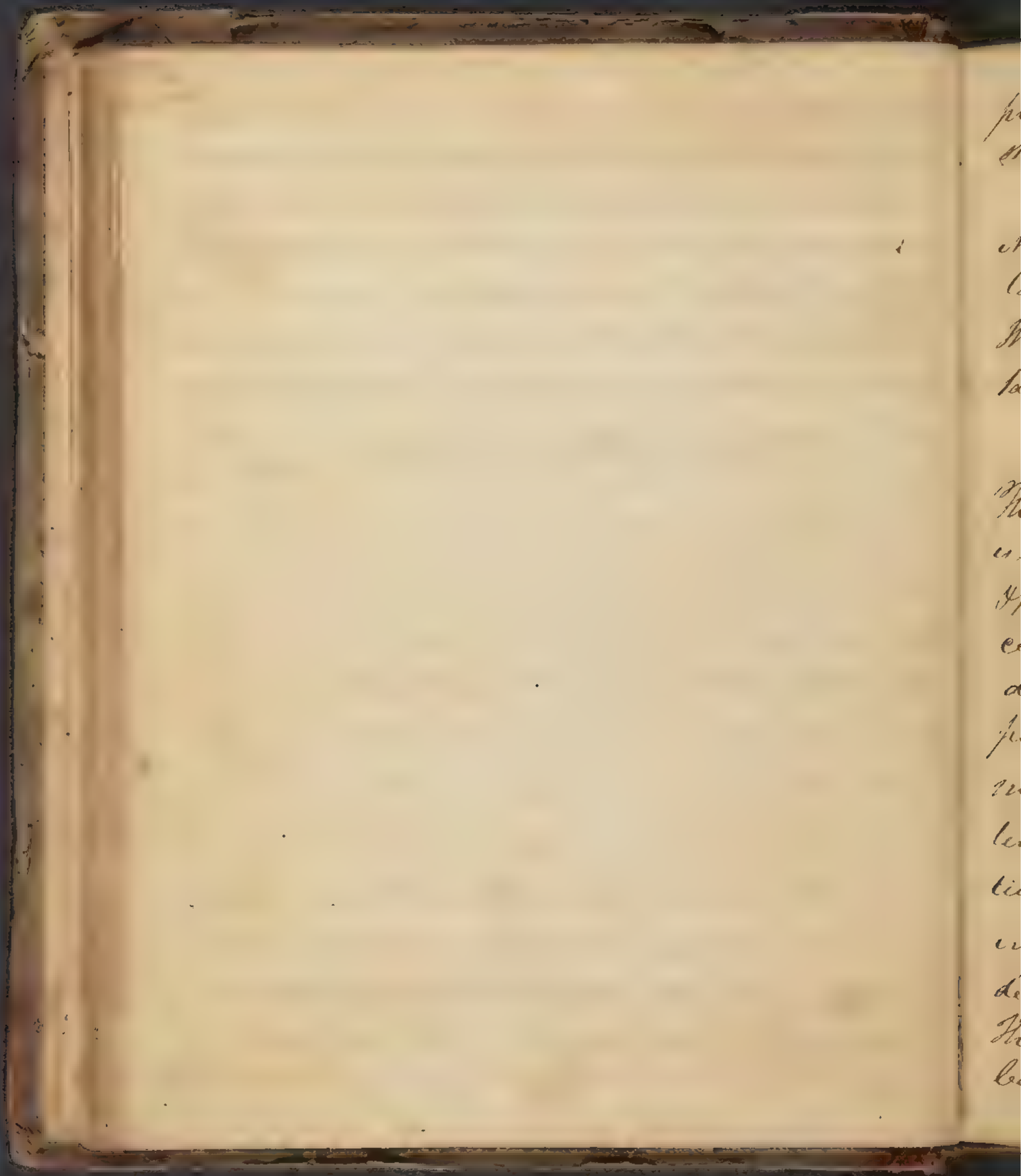


The progress of suppuration has often been suddenly stopped upon the reception of - Tausa or Iodine. Blisters to the part & I have both produced the same effect. It'll act by promoting absorption & thus creating a new action.

Pus. The Pus of a clean ulcer is nearly of the colour & consistence of cream. When cold, it gives out no smell, but when warm emits an odour familiar to surgeons. The taste is somewhat acid. Its specific gravity exceeds that of water. It does not readily unite with cold, but is suspended in warm water. Pure pus is no way corrosive to the granulations of sores, but is sometimes so to the surrounding skin, just as tears w^o don't injure the eye but irritate the cheek. Pus does not coagulate & is little disposed to Petrification. On Chemical Analysis, it yields the same products as blood & animal jelly.

The Microscope discovers particles or globules of a peculiar shape floating in serum.

Pus - how distinguished from other Fluids. -
The Globules of pus are different from other fluids. It unites with diluted Sulphuric acid & is precipitated.



precipitated on the addition of water, a circum-
stance w^h does not take place with mucous &c.

The periods of the formation of Pus are various
It is generally formed in 20 hours. A Boil or irri-
tating the Uthra has caused its formation in 5.
It is formed soonest on secreting surfaces. The Con-
tact of an ulcer is not necessary for its formation.

Ulcerative Inflammation

This takes place when the substance is lost & a sore
is left. The loss of substance is effected by absorptⁿ
& pressure. Ulcerative inflammation sometimes pre-
cedes the suppuration, as in cases where the
death of a part is occasioned by mechanical im-
pulse or acid applications. Ulcerative inflam-
mation progresses more rapidly towards the ex-
ternal surface, than it does in any other direc-
tion. Its extension over a large surface is ow-
ing to pressure. It is always attended by some
degree of inflammation, probably the adhesive.
The pain accompanying it is distinguished by
being combined with soreness. It is not often



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however attended with much pain, as in How it
cers & scrophula. When the dead parts are sepa-
rated there is no uneasiness attends the operation.
Besides these varieties of Phlegmons, there are
other kinds of inflammation.

Erysipelas Inflammation

This is often preceded by Rigors & Shivering, & is
frequently attended with fever, or succeeded by
it. It is seated in the Cutis vera, is sometimes
of a light, & at others of a dark red colour, disap-
pearing on pressure & afterwards returning. There
is at times a yellowish tinge. It commences on
a particular part in blotches, from whence it
soon extends itself. The pain is burning but
not commonly acute. It is often attended with
considerable itching, particularly on the buttocks &
face. The tumefaction is less than in adhesive in-
flammation. It has a determinate edge, the skin
feels thickened & transparent vesicles are formed
by extravasation of serum under the cuticle.



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The vessels never extravasate coagulable lymph,
but serum only in this species of inflammation.
Sometimes the inflammation is so great as to extend
to the cellular membrane, where pus is some-
times formed. These collections sh^d be immedi-
ately opened, as all the parts of the cellular
membrane with w^h it comes in contact are
very ready to become gangrenous & slough off
resembling wet tow in appearance. The mat-
ter discharged has a foetid smell. The Gan-
grene most frequently happens about the Nates
& Face. It resembles on pressure, pressing on a
quagmire. Violent Erysipelatous inflammation
in the Face, generally comes on suddenly with
violent heat; shivering, sense of tingling in the
ear, & sickness at Stomach. The colour is of a
light red, scarlet or Yellow w^h pressure removes.
There is a considerable itching & swelling, so great
as frequently to close the eyelids, but without hard-
ness or tension. Small transparent pimples form
& the fluid contained in them, when discharged



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excoriates the neighbouring parts. When it terminates most favourably the pustules dry and desquamate in 10 or 12 days scaling off like bran.

The remote causes are the same as of Phlegmonous inflammation & the cure exactly similar. The evacuating & Phlogistic plan generally succeeds, if employed before suppuration or gangrene take place. In England, Bark &c are employed from its commencement. Poultrices & all unctuous applications are improper, the best dressings are dry rice flour. The application of a blister to the part is often immediately beneficial, it probably acts by creating a new action. When suppuration has taken place, the skin sh^d be opened speedily, as this prevents the Pus from travelling thro' the cells of the Tella Cellulosa.

Oedematous Inflammation.

It is situated apparently in the skin only, but it probably extends much deeper. Probably the nature of this, & of the adhesive inflammation is the same & that the Oedematous is pro-



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duced by the inflammatⁿ attacking parts
predisposed to dropsy. Scarifications are apt to
produce gangrene Bread & Milk poultices
wet with brandy is a very proper application
stimulating poultices are here to be used Bleed-
ing, Purging &c are to be employed.

There are two other kinds of inflammation
that producing carbuncles, & that peculiar species
w^h attacks the extremities of old people, producing
death of the inflamed part of w^h more hereafter.

Necrosis.

By Necrosis we understand the com-
plete death of the part. Gangrene is an in-
cipient Necrosis.

Necrosis is of 2 kinds

1st Without inflammatⁿ

2^d Preceded by inflammatⁿ

The first is occasioned by a contusion or lacer-
ation of the vessels, w^h renders them inca-
pable of performing their natural functions.

7 Music of 2 kinds

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The second kind is produced by obstruction in the vessels, as instanced in Cold Rheat. The colour of the parts about to mortify, is first livid, then purple & finally black. deprived of heat & sensibility, the part emits a most noisome smell, & the cuticle is raised by vesicles containing bloody serum. The proper applications are light poultices of bread & milk moderately warm, until a separation of the unsound from the healthy parts takes place. A separation generally takes place in 7 days.

Treatment of Frozen Limbs.

This requires Snow, Cold Spring water & gradually increasing the temperature until the natural warmth returns. Mortification sometimes occurs without any known cause as in Ty. Fever &c

Mortification from Inflammation

In these cases the inflammation is supposed to be so great that the vessels cannot support the action, or that their excitability is exhausted. Per-

+
2^d There exists a peculiarity of action not depending on force

* It commences with pain, & slight inflammation. Skin of a lead colour. Sometimes slow at others rapid

& finally black

sons who are previously reduced by other dis-
 eases are most liable to mortification. Ulcers &
 extravasated in the Cellular membrane has pro-
 duced it. * Old people are often attacked by a spe-
 cies of mortification beginning in the toes. * W.
Pott advises Opium as the proper remedy.
 Pressure long continued will produce morti-
 fication. Amputation is never advisable while
 the mortification is progressing. The symptoms
 of mortification are a burning sensation, the co-
 lour changes from a livid to a dark red. The cuti-
 cle is raised by lived vessels, & the sensibility
 of the part is finally destroyed & a noisome pecu-
 liar odour is emitted.

The Remedies for Mortification are Ge-
neral & Local. If inflammatory action runs
 high, the common remedies for moderating it
 must be employed, such as Op. Purg. low
diet &c. Moderate inflammation is however
 necessary to the restoration of the parts. If no in-
 flammatory action exists, & the patient is much

Doctor P. is a man who never
gives this ill-humour business in assisting
his defence. He says it is a good
drenching medicine, ^{ought} ~~not~~ to be
employed only, in such.

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reduced & weak, an opposite mode of treatment
is to be adopted. The system in this case must be
supported by nourishing diet, & opium sh^d be
given to relieve the pain. Peruv. Bark is often
an invaluable remedy. Wine is very useful par-
ticularly if the patient be accustomed to it. The
Bark sh^d be taken in as large doses as the Sto-
mach will bear. —

Local Remedies. The exciting causes such as
acrid fluids &c are to be removed. —

Before the death of the part, the best application
is a common bread & milk poultice, moderately
warm. Scarifications & incisions are generally
improper. So also are stimulating applications.
These last however are sometimes useful in stim-
ulating the part into a more healthy action. A
carrot poultice, poultices impregnated with vin-
egar, or diluted muriatic acid are useful to cor-
rect the fotor of the matter. The fermenting poul-
tice may be used after a healthy action has com-
menced. It is made by mixing equal parts of

x Carbuncles. —

yeast, honey, flour & Charcoal finely powdered
& after it begins to ferment it is then applied in
that state. The application of Blisters is an in-
valuable local remedy for stopping the progress of
mortification. Their beneficial effects have been
exemplified in many instances. They sh^d be ap-
plied to the diseased parts not yet deprived of life.

There is a Species of mortification arising from some
peculiarity in the nature of the inflammation in-
dependant of the cause or violence, as Carbuncle.
The colour is a dusky red, pale at the edges w^h are cir-
cumscribed. It never produces good pus, the pain is
very severe, & the burning similar to a fire brand.
It is seated in the Cellular Membrane of the back &
the face, in w^h parts it most frequently occurs,
altho' instances are not wanting of its attacking
the head, extremities &c. Old people who live long
are peculiarly subject to it. Blisters over the part
affected, are generally as successful here as in com-
mon mortification.

I very much doubt (says D.P.) whether blisters

The following is a list of cases
 of the disease, which have been
 observed in the United States,
 and which have been reported
 to the Surgeon-General.
 The number of cases which have
 been reported is given in the
 following table. The number of
 cases which have been reported
 is given in the following table.

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will do any good where mortification occurs without inflammation. Death of the part goes on as long as the want of fresh blood continues. I think there is something peculiar in the inflammation producing mortification. Mortification does not arise from too great action of the vessels. Blesters are beneficial in mortifications by altering the existing mode of action. — It is relieving pain.

We begin the more particular consideration of several kinds of abscess.

Mammary Abscess.

We rarely see it in its forming state as it then generally comes under the care of nurses. It seldom occupies the whole breast often not more than 3 or 4 cells. Sometimes more than one timefaction exists. The secretion of milk is commonly diminished & is stop'd altogether if the whole breast be affected. — This abscess is liable to occur at any time while the woman gives suck, but occurs most commonly in the first 3 Mo' after delivery. The pain is at times excessively great, so much so that some women have

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declared it to be more severe than fracture
suppuration is most commonly produced.
The Causes are sometimes an extravasation of Coag-
ulated Lymph. wth hardening has been taken for
Scurvy. The remote causes are Mechanical
injury, Cold, too much distention for milk, & every
thing capable of exciting inflammation & suppur-
ation in other parts of the body. It is commonly
preceded by a swelling but wth it is afterwards fol-
lowed by fever. If called early, the affection is
very manageable. In the forming state, low
diet, & Mercerial purging every 2 or 3 days,
anointing the part with warm oil, & applying
a bread & milk poultice will be sufficient: sup-
port the breast by a bandage round the neck. The
application of a blister over the part has been
found in several instances to be a powerful dis-
cussant. When the pain has been so great as
to deprive the patient of rest for several nights,
as soon as the blister began to draw the pain was
relieved & sleep obtained. Where suppuration takes

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place & the matter does not readily find its own way out. It is proper to make an opening by incision & then apply a soft bread & milk poultice. When Oedema arises from extravasated Lymph, & of low diet, Purges, Sal. Ammon. Vinegar and Mercurial Ointment are the proper remedies.

Paronychia or Whitlow.

This sometimes occasions the loss of a finger, hand, arm, & even of life. It is generally seated in the end of one of the fingers. It is more or less violent according to its situation, & frequently ends in suppuration. When situated in the skin it is not ^{very} painful & is scarcely an object of surgery. When on the Adipose membrane it is more severe, & when in the Theca of the Tendon or Periosteum, it is worst of all. In this last situation the matter sometimes travels under the Tendon & Annular ligament & makes its appearance above the wrist. When the Paronychia is deep seated among the Tendons, an early incision is to be made quite down to



the bone, suffering the bleeding to continue till it stops voluntarily. It is then to be dressed with dry lint or a poultice. If any portion of bone is detached, it is to be extracted but not forcibly dragged away. Fungus flesh after proceed for the incision being too small, & is destroyed by enlarging it.

The 1st Species is where it is situated on the skin, seldom requiring any thing more than to open the abscess. —

2^d Species when it is situated on the adipose membrane, requiring an opening to be made down to it, & afterwards dressed with Sacch. Sat. &c.

3^d Species where it is situated on the Theca of the Tendons, & has sometimes induced mortification.

Isoas Abscess

It is situated in the vicinity of the Isoas muscle. The causes are the same as of common inflammation. It is sometimes attended with no pain, but at times there is great pain in the loins



The tumour ^{is} situated in the upper part of the thigh, is increased by pressure on the abdomen, & in a great measure disappears when the patient lies down. He cannot stand upright & the body is bent. Pus is formed in different parts. When the pus comes from within, the situation of the tumour varies. The rotation of the thigh cannot be performed with ease, suppuration proceeds very slowly, & the quantity of pus collected is often very great. The integuments are never inflamed, or painful, or discoloured. The pus seldom opens its way into the cavity of the abdomen thro' the Peritonaeum.

It is distinguished from Hernia by fluctuation chiefly, for it as well as for Psoas & Testula in Psoas, it has been mistaken. This abscess is commonly connected with a carious state of the Vertebra, & in this case is very difficult to cure.

The Remedies, if called early are rest; low diet; Use of the arm & back, Purges, & blisters over the part & an issue on the side of the spine.



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When the pus, ^{is formed} open the abscess in the manner recommended by Mr Abernethy in the direction of the thigh, so as to cut the Integuments skin & Fascia. Make the puncture with a Lancet, & small, so as to exclude the air, & evacuate the matter slowly. The object is to prevent the formation of matter. Bleed, use the Antiphlogistic plan & when suppuration takes place shall we open immediately? Some are afraid that the matter will go into the belly, others, that fever & Ectec will take place.

Abscess of the Hip Joint

This happens most frequently in early life from the 3^d to the 14th year. When forming, reluctance to step is one of the first symptoms. Considerable pain attends, but not always in its commencement. It also comes on at intervals & suddenly. The pain is frequently felt in the knee, instead of the hip joint. Frequently it is not constant, but returning at intervals when the child scr-



screams from its violence. It is worse at night — after a while the hip is swollen wth swelling increases as the disease progresses. Pressure on the great Trochanter will now give great pain — From the pain wth the Patient feels by leaning on his diseased leg, he supports the body on one leg wth appears to be the shortest. Place the Patient in a Horizontal position on the table to discover whether it is so. If the disease continues to increase the lameness is greater. Any motion of the hip joint gives the greatest pain. After a time the leg has been much, very much shortened — for the head of the bone being dislodged from the acetabulum by a tumour. This luxation generally takes place upwards & backwards & is Lord on the Hip joint — Desault on Spontaneous luxation of the Femur. —

Sometimes the Cartilage being separated from the extremities of the bones, inflammⁿ wth constitutes the disease, occurs, granulations shoot out & an Anchylosis is formed. In other in-



stances, parts are absorbed & taken away with-
out the leg being shortened for the formation
of a new acetabulum allowing a small degree
of motion. . . . Most generally, if not pre-
vented by proper treatment in its commencement
suppuration takes place w^h is commonly con-
nected with a Crises state of the Bones & accom-
panied with Hectic fever. The Patients case
is now deplorable, the whole body soon becomes
very much emaciated, & the size of the affected
limb is wonderfully diminished generally now
there are 2 or 3 fistulous openings thro^u w^h the mat-
ter is discharged Hectic fever almost always
succeeds when the matter is discharged by in-
cision. We are seldom called to Patients in this
disease till it has progressed very far, & it is only
in its commencement that much advantage is
derived from medicine. . . . When called in its
early stage, in the first place take away some blood,
& purge with Jalap & cream of tartar every other
day for a considerable time say 2 or 3 Months

* a case of wood carved to fit the side
of the body, thigh & leg is recommended
by Dr Physick to prevent all motion

* A seton sh^d be made by caustic
behind the Forchanter Major



Children bear these Purges well, & also when
they appear to be very weak. - Let the diet con-
sist of vegetables & milk. Keep the patient per-
fectly still & quiet, free from every kind of motion.
Warm bath impregnated with common salt
is beneficial. Leeches to the part are sometimes
very useful; but ~~no~~ Caustics sh^d be used.

By the above means I have often succeed-
ed in stopping the progress of this disease, even
after considerable mortification of the Hip had
taken place.

Wounds



Wounds. —

A Wound is a breach made in the continuity of the soft parts by Mechanical violence communicating externally. Incised wounds when made with a clean cutting instrument — Contused when the solution of continuity is accompanied with considerable bruising. Under this head, lacerated wounds, Gunshot wounds, &c are all included. Every wound is accompanied with considerable effusion of blood, but the hemorrhage is most considerable for incised wounds. Sometimes there is very little hemorrhage for contused wounds. Cheselden relates the case of a Miller whose arm was entirely torn off without any hemorrhage succeeding. Incised wounds bleed most, because the vessels are not injured beyond their divided extremities, of course the hemorrhage continues until the patient faints, or clots are formed. Contusion injures vessels beyond their



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divided extremities rendering them unable to
push on blood, extravasation takes place, and
pressure on the sides of the arteries is made which
prevents the passage of blood thence the
luminities of the vessels being killed, the contact
of dead matter stimulates to speedy coagulation
& a clot is quickly formed at the orificities of
the arteries. In wounds, the first thing to be
done is to stop the hemorrhage. This may be
done by pressure with the fingers, till other
means are resorted to. Wounds in the extre-
mities may be stoped by the application of
Petit's Tourniquet. It sh^d be applied where
there is but one bone as between the knee &
hip on the Thigh, & between the shoulder and
elbow on the Humerus. Compresses sh^d be
applied directly over the artery when applied
to the thigh. After the blood is stoped, clean
the wound fr^m coagulated blood, dirt, & with
a sponge & warm water. As soon as the
divided ends of the artery can be seen, pull



them out with a *Tenaculum*, & apply ligatures
 to both extremities. It is immaterial whether
 the ligatures be flat or round. The Anastomosis
 of the Arteries renders it necessary to se-
 cure both ends, particularly in the Radial &
 ulnar Arteries. When the vessels are divi-
 ded too high in the extremities for tourniquets
 to do any good. The Hemorrhage may be stopped
 by pressure on the Artery, as it passes over
 the first rib on the superior extremities; & in
 the inferior on the groin. Sometimes vessels lie
 so deep as not to be conveniently seen there
 dilate the wound. When they are so near the
 trunk of the Body as to render this dangerous,
 in these cases, compression can sometimes be
 made on the trunk of the Artery above the
 wound, long enough for a clot to be formed -
 thus stopping the Hemorrhage. If this cannot
 be done, the Artery may be felt; & a needle is
 to be passed with its concave surface next to
 the Artery, round it, so as to apply a ligature



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Sometimes, even in the extremities, it is exceedingly disagreeable & inconvenient to dilate the wound, as in case of the division of the Plantar Extensor Artery in the sole of the foot. Here bleeding is put a stop to by compression above on the Anterior & Posterior Tibial Artery. When the divided Artery is in the Throats & cannot be reached, the Hemorrhage may be stop'd by dry Sponge, Agave, Shunkling or of flour, & lastly by the actual Caustery. Sometimes wounds of small, even in large arteries will heal, thus preventing the operation of Amputation. When this is intended, viz, to let the wound in the vessel heal, all probing, pushing in of dressing &c. sh^d be avoided, the patient sh^d be kept perfectly quiet; with the affected limb elevated, a low diet sh^d be prescribed &c.

The Hemorrhage being now stop'd, the lips of the wound are to be approximated, & retained in contact by strips of adhesive plaster spread on linen or muslin, rather than on leather.

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leave the space of about $\frac{1}{4}$ of an inch between the strips for the discharge of blood pus &c. I commonly leave a small portion of the wound unapproximated. The adhesive plaster sh^d be assisted by compresses & bandages; commonly adhesive inflammation takes place in 48 hours. Even in transverse wounds, the adhesive plaster is often sufficient. If it be necessary, bleed, low diet, rest &c. When inflammation is absent, it must be excited. Avoid Sutures if possible, because the soft parts are irritated by the needle, ligature &c. and this prevents adhesion. When they are absolutely necessary, as in cases where projecting parts are cut off, as the ear, tip of the tongue &c. the twisted & interrupted sutures are best. In interrupted sutures always make a knot on one side of the wound. -

Contused Wounds, are where there is considerable bruising besides a solution of continuity, & sometimes complete death of the parts. - here it is not proper to approximate the di-

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divided surfaces Guard against violent inflammation by the Antiphlogistic Remedies & By Purging the alloy excessive irritation by Opium Bread & milk poultice is the best topical application & rest sh^d be enjoined. Inflammation is commonly greater in winter than in summer. After suppuration takes place, & granulations are formed, approximate the sides as in incised wounds. Never make compression on an Artery when you wish the puncture in it to heal, it induces many unfavourable symptoms, Oedema particularly. —

Punctured Wounds, or such as with small external openings, have considerable depth it is not always proper to dilate. Sometimes however it is proper for the purpose of removing extraneous substances. When dilated with the finger, let it be done very soon after the accident, otherwise it is best to wait till they are thrown out. After suppuration has taken place, search^d punctured wounds with probes &c. is to be ~~avoided~~ avoided. When large arteries are divided

* Doctor Pison for many
cases which he was ^{called} ~~called~~ to
that by the application of a blister
to the part which was about to
induce the tumor that it often
prevented it & of course cured the patient

* Opium combined with Ipecac.
is the best anodyne —

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it is necessary in most cases to dilate in order to apply a ligature on it. Whenever constitutional symptoms occur in consequence of these wounds, they sh^d be dilated. In warm weather it is necessary to dress with stimulating applications or to dilate to prevent them from healing too quickly w^h is apt to induce Tetanus. Medicamenta, low diet, Lavatives; if necessary Opⁱ & Sudoise Anodynes &c.

Having considered wounds in general, we come now to wounds of particular parts

Wounds of the Eyelids.

Incised wounds of the Palpebrae can commonly be cured by bringing the divided surfaces together & retaining them by adhesive plaster, even when the eyelid is cut entirely thro', but if any portion be cut off a suture is necessary. In making it we sh^d avoid piercing the Tarsus & M^ustr^a, as the suture w^d then induce inflammation by being in contact with the globe of the eye - pass the needle thro' the skin & cellular

✓ through

membrane only. If inflammⁿ takes place, it is to be removed by the remedies presently to be mentioned.

Injuries of the Ball of the Eye

may arise for various causes. A young Lady had the Cornea wounded by the glass w^h flew off for the bursting of a Bottle of Elder. The Iris sometimes adheres. All extraneous Bodies w^h pierce the eye, or sand, even if it be removed if they can be come at. When the internal parts are injured, vision is either impaired or destroyed. The Pupil is altered in figure, Situation &c. The treatment is to remove extraneous Bodies. Keep the patient still & in a dark Room. Low diet. Of leeches, cupping, Blisters to the temples &c. to be employed. The best Collyrium is an infusion of the汁 of Sassafras in water, or milk & water. In a case of very violent inflammation of the eye induced by a knife being thrust into the Cornea & into the Posterior Chamber, the Patient was bled 14 times at last cup =



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ped, blistered &c. but nothing seemed to do any good, till Calomel was given in such doses as to induce a salivation. As soon as the mouth became sore, the inflammation moderated.

In operating on the eyes of Children, a Speculum the ¹st always be used to fix the eye. If the Crystalline lens or its Capsule become opaque, it is often the effect of being injured or pierced. A lady who came under my care had the misfortune to pierce the Cornea with a drawing needle. The Crystalline lens or its capsule became opaque, & the very violent inflammation ensued. Could only be subdued by mercury. The opacity also disappeared after Hyalims. If I were called to a similar case, again, before I used Mercury. I w^d apply a circular blister over the eyelids. Patients generally say that flies get in, & raise an objection, but if you attend to the materials you use, mix the Cantharides with the Ointment in a thick consistency, & afterwards apply a



white gauze over the eye. there is no danger of it. If this failed, I w^d then use Mercury.

The Face is subject to every species of wounds in common with other parts
In Incised wounds keep the divided surfaces in contact by ad: plaster w^h is commonly quite sufficient; but when a portion of the Lip is cut off, the interrupted suture becomes necessary.

Contused wounds of the Face are to be treated in the same way as similar wounds in other parts of the body applying poultices, till suppuration & granulations appear; then approximate the surfaces &c. Sutures sh^d not be used without the most urgent necessity on acct^l of the loss of beauty they are apt to occasion.

Tongue. When a portion of the Tongue is cut off; w^h is sometimes the case in children, the interrupted suture is absolutely necessary. Before attempting to make the suture, the child's mouth must be fixed open by a piece of round wood between the teeth or by



some similar contrivance. Sometimes it is necessary to draw the tongue out of the mouth with a hook till the suture is made. Feed with spoon meat till the union is effected. In wounds of the external ear, the suture is necessary.

Wounds of the Throat.—

These commonly occur for an attempt to commit suicide. In most instances the Trachea is partly, & sometimes quite cut thro'. When the Esophagus is cut into, the danger is very great. It may be opened without the Carotid Arteries being divided. It is sometimes wounded without the larynx receiving any injury. Case of an old woman who thrust a penknife along side the larynx into the Pharynx.

Treatment. If the Trachea is only partly divided, adhesive plaister is sufficient. Stop the hemorrhage, by securing every vessel whether Artery or vein, even the Carotid Artery itself by ligatures. After the hemorrhage is stop bring the



divided surfaces into Contact, & keep them so

When the Trachea is partly cut thro' the ad: plaster answers the purpose, but when it is completely divided the interrupted suture is to be used. Make the suture in the Cellular membrane round the Trachea, & not in the Trachea itself, for making the suture thro' the Trachea w^d induce violent irritation cough &c. Do not draw the lips of the external wound too close. When cough occurs allay it by opiates & demulcents. When the Oesophagus is wounded use the interrupted suture, give nutritive glysters. In some cases we may apply nourishment to the system thro' a flexible tube into the throat thro' one of the Nostrils. Great danger attends all wounds of the Oesophagus. -

• Wounds penetrating the Thorax.

Symptoms. Air will go in & come out at the wound at each inspiration & expiration, the respiration is laborious, cough &c. If the lungs are injured, blood will be coughed up. If any

+ Inter costal)
(H)

considerable artery is divided, blood will most
probably flow out at the wound, & syncope &
cold extremities attend. Some authors direct
when the inter^{costal} ~~artery~~ Artery is divided, to take
it up by a ligature passed round the rib, but I
never had occasion to try this practice — Simple
incised & punctured wounds will often heal
upon applying adhesive plaster by the first in-
tention. Shot makes wounds of the worst kind,
w^h must suppurate they occasion violent in-
flammation w^h must be removed by low diet;
plentiful U^s. Purgings & rest In one case I
found it necessary to abstract 120 $\frac{1}{2}$ of blood in
12 days. After this it terminated by a discharge
of copious secretion of serum w^h is one of the me-
thods in w^h inflammation terminates Authors
direct the air to be drawn out of the cavity of the
Pleura before closing the external wound, but this
I think unnecessary, as air is not an acid fluid
It will not irritate internal parts to inflamma-
tion.

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Wounds of the Abdomen.

When they do not penetrate, they require no peculiar treatment always, healing readily by the first intention. When they penetrate without exposing the contained parts, they are to be closed with the interrupted suture. In making it, have a ligature armed with 2 needles one at each end, w^h are to be passed fr^m within the cavity of the Peritoneum outwards $\frac{3}{4}$ of an inch fr^m the wound. After having passed all the ligatures w^h sh^d be $\frac{1}{2}$ an inch apart, secure the wound by tying a knot on the ligatures, by the side of the wound, keep the patient on low diet & rest, & keep the Wounds open. If any of the Viscera be wounded, the danger is greater. When the Stomach, intestines, or any of the hollow Viscera are wounded, the principal danger arises fr^m the escape of their contents into the cavity of the Peritoneum, thus exciting inflammation. Wounds not mortal in themselves often produce death in this way. If the Stomach be the wounded Viscus, some of the food

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lastaken is commonly evacuated by the wound,
Blood is vomelled up. If the Intestines are wounded,
blood passes by stool. The follow^g are the common
symptoms both to wounds of the Stomach & Intestines —
Severe nausea, griping, Cold sweats, Singultus and
Death w^h commonly occurs on the 3^d day. But
sometimes much sooner even in a few hours
When the Bowels are very much injured, the pati-
ent lies insensible till he dies. When the Sto-
mach is much distended, a large wound in it by w^h
its contents are evacuated by the wound, is less dan-
gerous than smaller ones, suffering only part of its con-
tents to escape into the Cavity of the Peritoneum. Nei-
ther despair of incised wounds of the Stomach, they
are not necessarily mortal. In most cases of pen-
etrating wounds of the Abdomen, a portion of the In-
testines or Omentum protrudes thro' the wound,
there is great pain & tension, & the part of the in-
testine wounded being not far off. This seek for,
& when found, close it with the interrupted
suture. If the gut be cut completely across

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four ligatures are quite sufficient - after all are secured with knots, cut off close to the knots, & return the intestine into the cavity of the abdomen - the ligatures will all be carried away with the Joser. Most care is required to close longitudinal wounds of the intestines without diminishing the cavity of the Canal, indeed this cannot be done. As transverse wounds are easiest closed & heal best, it may be advisable in longitudinal wounds of considerable extent, to convert them into transverse ones, by cutting out the wounded portion entirely, then proceed as directed above. Recoveries have occurred after 3 or 4 inches of the intestinal tube were cut out. After the wounded intestine is closed & returned into its proper situation, close the external wound also. I prescribe very low diet. If the Omentum or Mesentery be wounded & bleed, take up the bleeding vessel, bringing the ends of the ligatures out of the external wound. Adhesive inflammation will then take place on the Peritoneum round the intestine. A

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Negro in this City received a load of shot in the right flank of the Cista of the Humer, the pain was very great, & in a few days he discharged blood & shot. He was bled, kept on low diet, drank milk & tea, took Opium as an Opiate to relieve the pain, had his belly fomented & in 3 weeks recovered altho' his intestines were pierced by the shot. This was more dangerous as the contents often pass thro' the shot holes. —

When we cannot find the wounded intestine, stitch up the external wound, & follow the above directions. The ligature sh^d pass thro' as small a portion of the cavity as possible. In some instances tho' from the symptoms there is every reason to believe the intestine is wounded, yet if it does not protrude, & the wound is not seen, here debate a little. By w^h means perhaps you may bring it into view. I w^d be unwilling to do more than to make a very small dilatation to search for it, especially as such wounds have healed without ever being seen by the Surgeon. When wounds of the inter.

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times cannot be got at with very little dilatation
stretch up the external wound, keep the patient per-
fectly at rest, allow no food for 2 or 3 days, & but
little water, thus avoiding distention. If inflam-
mation occur, bleed largely. Glysters to open the
bowels, Anodyne Glyster to procure sleep, Fomen-
tations & Blisters. Any instrument penetrating
the right Hypochondriacal Region will most pro-
bably wound the Liver. This is known by a pain,
sense of heavy pressing or dragging. If the wound
be in the right lobe, the pain will be in the right
shoulder, if in the left lobe, the left shoulder.

Wounds in the Liver if small or superficial, may
heal readily, but if large or deep, the danger is
considerable for hemorrhage. Little can be done
here by the surgeon, but keeping the patient at
rest on the left side, living on very low diet, con-
sisting of Barley water chiefly, keep the bowels
open by laxative Glysters. If inflammation oc-
cur - Uf. Poultices, Fomentations & Blisters.

Wounds of the Gall Bladder. thro'
wh the bile is poured out into the Cavity of the Ab.

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Abdomen are I believe always fatal - So also in
the Pancreatic Duct & Pancreas.

Kidney - When this is wounded, bloody
urine is discharged. If the wound be made in the
Posterior part, so that the urine flows freely thro'
the external wound, the danger is not so great, but
if the Anterior part of the Kidney be wounded, or
the Ureter, occasioning the urine to be extravasated
into the Cavity of the Abdomen, it is almost uni-
versally fatal.

Wounds in the Fundus of the Blad-
der are fatal for the same cause viz the extra-
vasation of urine producing a high degree of Peri-
toneal inflammatⁿ. & death. But wounds of
the neck of the bladder are not so dangerous.

Wounds penetrating the Cavities
of Joints require immediate attention. In order
to prevent inflammatⁿ. & suppuration they sh^d
be united as soon as possible. Incised wounds of
the joints, if properly treated may be easily healed
in the course of a week; but if proper care be not

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taken, inflammatⁿ fever, & a stiff joint will
 ensue. Always bring the sides of the wound into
 contact, & retain them so by adhesive plaister.
 Sutures are seldom or never necessary. If they are
 used, the needle sh^d never penetrate the Capsu-
 lar Ligament. But only thro' the integuments,
 for stitching in the joint will excite to inflam-
 matⁿ. & thus frustrate our designs of uniting by
 the first intention. This mode of union we sh^d
 always attempt; even when some part of the ar-
 ticulating surfaces are destroyed, it is sometimes
 proper to attempt union by the first intention.
 To do this speedily, a proper position of the limb
 is of the greatest importance. The limb is to be
 placed in that posture w^h is best adapted for the
 approximation of the sides of the wound. Never
 push but into the parts. It causes great irritation.
 In every case where the wound penetrates the Cap-
 sular Ligament, a splint sh^d be applied on the
 limb so as to prevent all motion. & keep it uni-
 formly & constantly in a proper position. It pre-



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vents the convulsive twitches. Splints are ap-
plicable to all cases of inflamed joints whether
wounded or not. It is impossible for wounds
of the joints to heal by the first intention, if mo-
tion of the joint be permitted. The least motion
occasions inflammation, & becomes the cause of
the formation of large abscesses: I repeat it
perfect rest is of the greatest importance in
wounds of the joints. When the cavity of a joint
is laid open by laceration, or a contused wound,
union in the first intention cannot in general
be effected. Here apply a poultice to the part,
keep the patient on low diet, approximate the sides
of the wound, & let the proper position of the limb be
adjusted by bandages, retain them so, & keep the
joint free for motion. Joints when wounded do
not so readily run into violent inflammation
as some other parts probably from a copious flow
of synovia keeping it under. If inflammation
does occur. Of both general & local the 1st be
employed, - the Antiphlogistic Regimen &c



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Blisters are to be employed but no sutures. After the granulations are formed, bring them together by adhesive plaster. The arm sh^d ne-
ver be kept extended for after Anchylosis is for-
med, & the joint becomes stiff. This posture is ex-
ceedingly inconvenient.

Joints of the Fingers. When
penetrated apply Splints so as to keep the fingers
extended & the joints free from motion. Such wounds
of the joints of the fingers w^h by applying Splints
might have been healed in a very short time,
have grown worse & worse for many weeks,
when the application of Splints have been neg-
lected. In extensive lacerated wounds of large
joints, especially if the bones be shattered and
curvated, the danger is very great, as Debility
Mortification, Tetanus & often speedily supervene,
& it is an exceedingly nice point to determine
whether immediately to amputate or not. If the
patient escapes these first symptoms, he will at
least have a painful, tedious, suppurating sore

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Fleeting will most probably accompany, & it
often terminates in Cancer, or complete Anchylo-
sis, rendering the limb useless. What the effect
of such wounds will be, it is impossible for the
Surgeon to tell, he sh^d state to the Patient all the
risks for mortification, Tetanus &c. in attempt-
ing to save the limb, & the probable success of
speedy amputation. He sh^d then let the patient
& his friends determine whether it is to be ampu-
tated or not. Such wounds are more dangerous
in the heat of summer, in old people, & in the
intemperate.

How injuries are here repaired

1st By of the Capsular Ligament 2nd By An-
chylosis. The Cartilage is always removed previ-
ous to the formation of a stiff joint, by absorption
by the absorbing vessels. Cartilages never in-
flame, exfoliate, suppurate or Granulate, hence
it is sometimes proper to scrape off the Cartilage
from the articulating surfaces - thus relieving nature
from the necessity of undergoing a tedious process in
order to remove them. This scraping off the Cartila-
ges from the ends of bones will answer every pur-

+ Four to all by

pose designed by Mr Gorch to be accomplished by sawing off the ends of bones. He thus removed the Cartilages to give room for the formation of granulations & Anchylosis. It is reduced to a state of compound Fracture. When bro't to this state guard against violent inflammation by surgery & the Antiphlogistic Regimen. Apply splints so as to keep the joint perfectly at rest. If inflammation occur use R of the

Wounds of Nerves & Tendons

if made with a clean cutting instrument, heal early. If the nerves are ~~completely~~ divided, the first symptom is said to be great pain, then numbness, want of sensibility. If Tendons are completely divided, the motions performed by the muscles to w^h they are attached cannot be performed. When the nerves or tendons are only partially divided, the symptoms are said to be very violent; such as extensive inflammation round the wound, fever, delirium, spasms & even death. To remedy these evils, complete divis-

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ion of the Tendon or nerve has been advised, but I have never found this necessary. Indeed when the above symptoms occur after Ves. they do not in my opinion arise from the incomplete division of the nerve or tendon, but from inflammation occurring on the internal surfaces of the vein. In Punctured wounds of the nerves when they produce Fever, delirium &c it is then sometimes necessary to divide them. I never will make a deep incision. These bad symptoms very rarely occur from a puncture of a nerve or Ves. but sometimes from inflammation under the Fascia of the thigh. When Tendons are punctured, blisters generally relieve the pain. If not I will cut the Fascia to prevent the formation of pus. Tendons when cut thro' require no particular treatment, bring the divided ends together, & keep them so by a proper position w^{ch} is maintained by Splints bandages & Rest.

When the Tendo Achilles is divided, as frequently happens, it is necessary to keep the



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foot extended on the leg, wth position brings the divided ends together. This extension is best preserved by a splint placed anteriorly, or by a strap acting from some fixed point on the heel above. Bandages on the upper part of the leg have excellent effects in compressing the muscles of the Tendon & preventing their action, wth w^d draw the superior portion upwards for the inferior. They are also useful in affording the fixed point above for the heel strap to act from.

Wounds of the Veins seldom give much trouble, hemorrhage from them is easily stopped by compression, only noticed in this place for their being apt to inflame on the inside. Inflamed an. after V. is owing to this. but it is commonly laid to the charge of the operator, in his want of skill. to his puncturing a nerve, tendon &c. This inflammation sometimes extends along the vein both upwards & downwards, & to all the surrounding parts. Sometimes it terminates by adhesive inflammation wth uniting the surfaces of the inside of the vein.

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its cavity is thereby obliterated. If the inflammation of the insides of the vein be not prevented by the adhesive inflammation, it then extends along the vein both ways, ending in suppuration, and the formation of a succession of strings of abscesses, particularly between the osifice & the heart, all which require opening. Sometimes no abscess is formed but the pus is mixed with the mass of circulating blood. Where much pus gets in this way into the circulation it must prove fatal. Sometimes the coats of a vein next the skin ulcerate, & an abscess is formed no way different from common abscess, when the coats are destroyed. When inflammation takes place so as to alarm the Surgeon apply a compress on the vein above, so as to stop its progress by exciting adhesive inflammation thus obliterating its cavity. Apply a blister over the inflamed part, protect the Osifice by a small strip of adhesive plaster. The inflammation appears as if the arm was affected by Erysipelas. The painful & dangerous symptoms after the operation occur from inflammation consequently the operation



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of wholly dividing nerves as recommended by Surgeons can do no good, as punctures of the nerves have nothing to do with the disease. To prevent this inflammation on the inside of the vein after V.S. requires particular attention in the Operator. He sh^d immediately & accurately close the orifice. This is done by puckering the skin. One hand sh^d push the skin towards the orifice, & the other the compress on the other side, so as to throw it into folds. The compress sh^d be made of linen, & sh^d be large to prevent secondary hemorrhage it is preferable to the application of sticking plaster.

Gun Shot Wounds.

On this subject see Hunter. When fire arms were first introduced the wounds made by them were thought by some to be poisoned, by others cured, & the ancient mode of dressing tended to keep alive this opinion. The symptoms are indeed very peculiar, but capable of being explained on the common principles of Surgery, without with the Ancients believing them pois.

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oned Being made by Arthur Codrington, they far
take both of the nature of lacerated & contused wo
unds. When the velocity of the Ball is very great,
it kills all the parts with which it comes in contact.
Such wounds never heal till a Slough is thrown
off which occurs in 10 or 12 days, when a Hemorrhage
is apt to take place. (They never bleed much at
first) This shews the necessity of a Surgeon ha
ving all the Apparatus for stopping a Hemor
rhage in readiness about the time that a Slough
is expected to be thrown off. The degree of contu
sion varies according to the velocity of the Ball.
If the Ball passes slowly, the parts will be torn
or lacerated but not always killed. When not
killed, they may heal by the first intention. It
is owing to the less velocity of the Ball at the
part where it comes out of the body that the
wound at this part heals easier than the wound
where it entered. -

The Treatment of Gun shot wounds sh^d
be the same as similar wounds however produced.
If any prospect of success appears, attempt the

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union by the first intention. When the parts are killed, this mode of repairing the injury will not answer.

The custom of indiscriminately dilating Gun shot wounds is a bad one - they sh^d only be dilated under peculiar circumstances.

1st If a ball be lodged in the neighbourhood of the Larynx so as to impede respiration, it is necessary to dilate the wound & extract it immediately.

2^d If much hemorrhage takes place, it is necessary to dilate to take up the bleeding vessel.

3^d If the Brain, Cranium or Scalp be wounded we sh^d dilate that the state of the bone may be known. Some surgeons think that the danger of inflammation & suppuration when the skin is wounded, is so great, that in every instance, a portion of the bone sh^d be taken out with the Trephine. If bad symptoms have not actually appeared I w^d be for deferring the operation & trust to the liberal use of Evacuants. A bread & milk poultice sh^d be used. If the skull be fractured, it is necessary to remove the extraneous pieces of bone. Remove the ball also, if it can be



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early got at. In all Gun shot wounds, if the ball can be easily come at, it is proper to extract it. The patient is always easier in his mind when this is done. But I would by no means attempt to search for the ball with long. For ceps & Probes, much probing adds to the Original injury for the wound. Balls often remain for a long time in the body without inconvenience, a sack being formed around them by the adhesive inflammation. The Circuitous direction of balls will ever form a valid objection to searching for them. Instance of a ball that run completely round the Thorax under the skin, presenting an appearance of having gone directly thro' the body. The best local application to gun shot wounds, till suppuration is established, & the dead parts cast off, is a soft poultice; but if inflammation is absent it must be excited by the application of stimulating dressings. It is however, often necessary to avoid all stimulating applications. As after all severe

When the Ball has killed the parts below, & there is danger of inflammatⁿ suppuratⁿ & Hectic Fever. Or if the large joints & soft parts are extremely torn. & shattered Amputation becomes necessary provided inflammatⁿ has not commenced. —

When amputation is advisable, the sooner the operation is performed the better, as the patient will not only bear it better, but he will be saved. From the danger of an extensive lacerated wound & perhaps from Tetanus. —

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accidents, the mind is commonly very much disturbed, & there are Shiverings, Coldness of extremities, Cold sweats & we sh^d prescribe a sudorific. Anodyne, as Dover's Powder, w^h relieves these bad symptoms. In Gun shot wounds, inflammation is apt to run very high, hence many have advised very copious U^s to prevent it. I think U^s sh^d be delayed till inflammation has actually occurred. Some Surgeons have recommended U^s in all cases. This is certainly not proper in every case. Tetanus & have supervened when inflammation has been prevented or suddenly removed by evacuation. After Tetanus has occurred, amputation will be attended with no advantage. A case came under my notice, where the Surgeon amputated after the occurrence of Tetanus & death immediately followed.

As soon as supuration is established, prescribe Bark & an invigorating diet.

Wounds of the Limbs made by Balls - Here the bones are often fractured. These are.

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to be treated as compound fractures. Remove the loose fragments, & guard against violent inflammation.

Wounds of the Head shall hereafter be particularly considered, when occasioned by fire arms they require no peculiar treatment.

Gun Shot Wounds penetrating the Thorax are apt to excite very violent inflammation. To remove it it is necessary that it be carried to a very great extent. Many instances of this practice might be adduced, particularly a case it was under the care of Dr. Rush. A valuable life was saved by abstracting 120 OZ of blood in a short space of time. Besides if it is necessary to apply Blisters round the Thorax externally, & to confine the Patient to very low diet. When the injury is done to the Spine, all the parts below become Paralytic. If the ball enters the Spine in the neck, above the place where the Phrenic nerve goes off, it is instantly fatal, for the.



Phrenic Nerves will be injured, & they supply
the Diaphragm, by wth respiration is performed

Wounds of the Abdomen Gun

Balls are more or less dangerous according to
the extent of the injury & the nature & importance
of the parts wounded. The Interrupted suture
sh^d be used in wounds of the Abdomen.

Liver If this be penetrated to any depth, it
is very commonly fatal from the great effusion of
blood. The symptoms of it are depression, weak-
ness, Syncope, Hiccups, & insatiable thirst.

Bladder Wounds of this, allowing its con-
tents to escape into the general cavity of the ab-
domen, is always fatal. When the Fundus of
the Bladder is wounded, the urine getting into
the Peritoneum, & communicating with the Belly
will prove fatal. —

Stomach. There will be depression, Nau-
sea & Vomiting, & if the Kidneys or Bladder
be wounded, Bloody urine. Neither wounds of

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The Bladder nor Uterus are necessarily fatal, but they become so by the escape of the urine thus exciting Peritoneal Inflammation. -

In wounds of the Stomach & Bowels, if neither solid nor fluid matter escapes the danger is very great, for violent Peritoneal Inflammation. In all these cases keep the patient on very low diet & the parts perfectly at rest. Superficial dressings to wounds, as simple cerate spread on lint. If inflammation occurs, Use Blister, Fomentations & externally. If a portion of the intestine is found to protrude & uninjured, it is to be immediately returned. If injured bring the ends together by a suture, cutting off the threads close to the knots, & then return the intestine. -

Balls often pass thro' joints, - when thro' the larger joints endangering the loss of a limb, & even of life. If the velocity of the ball be great & the bones shattered, they must suppurate - Sometimes they heal by the first intention. Case where a ball passed between the



Patella & Condyles of the Os Femoris. & Healed readily in this way. When the velocity of the Ball is great & the Bones are much shattered, it is sometimes necessary to amputate immediately, & when there is good reason to think it will have to be done at all I always choose to perform it in the first instance. It prevents danger from Mortification extensive suppuration and Ecthie. Patients always bear the operation better when performed immediately after the accident. —



Ulcers.

Ulcers are often the consequence of Wounds, it is however generally of little consequence to know the causes, but to know the proper treatment of them is a matter of the first importance. When an ulcer is situated in a healthy part, & the constitution sound, granulations arise having the appearance of small red points. They are formed from extravasated coagulating lymph & becomes vascular. From such an ulcer, pus, nearly of the colour & consistence of cream is secreted. When free suppuration is established, the inflammation & swelling subside, & the granulations if brought into contact have a disposition to unite. At this time it is proper to approximate the sides of the ulcer as much as possible, by this means, union of the granulations is effected often in 24 hours. Granulations also possess a power of contracting, & thus draw the sides of the sore together. This expedites the healing by di-



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minishing the surface & superceding the necessity of an extensive formation of new parts. This contraction may be assisted by surgical aid. When the granulations arrive at the level of the surrounding parts, the next operation is the formation of new skin to cover them. The process of Cicatrization generally begins at the edges, & frequently at more points than one. Sometimes, particularly in Old Ulcers, it does not begin at the edges, but from the Centre. A beginning Cicatrix has a light blue colour. &c.

Treatment. Dry lint is to be applied over the ulcer, as it absorbs pus. A Pledge of tow &c. applied over this, & kept moderately tight by a roller. Mr Baynton recommends the Approximation of the edges as far as possible by adhesive plaster. Previous to its application, immerse the ulcer in cold Spring water, as this assists its power of Cicatrization. The strips of adhesive plaster are not to be confined too close together, as this confines & retains the pus, & thus produces mischief. If the

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Ulcer be on the leg, these strips are to be retained
by a roller from the foot to the knee, applied so as
to compress the parts considerably. When granula-
tions become stationary, are indolent & do not
cretaize, this process may be hastened by the
Application of Blue Vitriol, Spirits, Powder of
Galls or Rhubarb. If these fail exposure to the
air is often useful, especially if the sore be
small, it dries & forms a Scab.

The Circumstances w^h retard or impede
the Healing of Ulcers are

1st Ulcers on the legs are generally most dif-
ficult to cure for the influence of gravity, the Co-
lumn of blood pressing on the newly formed granu-
lations, ruptures them, these newly formed parts
being too weak to circulate the blood. From
the Rupture of the Granulations they are destroy-
ed, blood is discharged, irritation excited, & secre-
tion of good pus prevented. If the vessels are
not ruptured, & the blood stagnates, a purple
hue or a black colour is produced, the vessels

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are kept upon the Gatch, & the same bad consequences as occur from a rupture of the vessels is the result. By the purple hue of the granulations, or effusion of blood in an ulcer, we can tell when contrary to our directions, our Patients have been exercising.

Treatment. Strictly enforce rest & place the Patient in a horizontal position until the cure is effected. If your patient cannot submit or conform to this, the application of Bandages over other dressings becomes necessary. These Bandages are of three kinds viz Laced Stocking, Roller & adhesive plaster. The Roller is generally the best. The laced stocking is very good when it fits well, but this is very difficult to effect. By the help of these bandages, ulcers heal while the Patient is walking about; but not so soon or easily as if he had been at rest. There are some few indolent ulcers which form exceptions to this general rule. The application of Sprouts I have been found serviceable. —



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2^o The second impediment to the healing of ulcers is an Oedematous state of the limb, or part on w^{ch} the ulcer is situated. The pressure of the fluid effused into the cells of the Cellular membrane will keep the newly formed parts constantly on the stretch. This by irritating will produce inflammation & cause the newly formed parts to slough.

Treatment If practicable confine the Patient to bed in a horizontal posture; if not, apply Bandages as before directed. These sh^d be applied in the morn^g before the Patient gets up, when the tumefaction is least, having been diminished in the night by rest. In a horizontal position

3^o The third impediment to the healing of ulcers, is the practice of stuffing them with lint; a dressing to the bottom w^{ch} is called this, in Fistula in Ano particularly, has been very much practised & has proved very prejudicial. This practice of stuffing in dressings keeps up the irritation, & interrupts the process of union. Under this head may be classed the ap...

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Application of improper powders, Salves, Washes &c.
not only serve to renew the ulcer as often as it is dis-
posed to heal. —

The fourth impediment to the healing of ul-
cers is whatever impairs the health & strength of the
Patient. Intoxication is very prejudicial. Very hot
& very cold weather are equally injurious.
Simple strength or weakness do not impede the
healing of ulcers. Febrile diseases sometimes cure
obstinate ulcers

Ulcers are divided into

1st Healthy Ulcers

2^d Inflamed Do

3^d Fungous Do

4th Oedematous Do

5th Strophing - Do

6th Indolent - Do

7th Carious — Do

8th Ulcers attended with Varicose State of the Veins

9th Ulcers attended with, or preceded by general
or local decreased action. These include Venereal
Scrophulous, Cancerous Ulcers &c. — Inflamed



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Inflamed Ulcers.

The parts are painful, hot & red. Sometimes coagulating lymph is extravasated on the surface & a membrane is formed, similar to a membrane for inflammation in other parts of the body.

Treatment The Antiphlogistic plan how ever gettable diet & of Purgings are to be pursued, When the state of the constitution renders evacuations improper, elevating the diseased limb above the rest of the body has been very beneficial as this weakens the force of the circulation in the inflamed part.

Fungous Ulcers. Large granulations rise above the level of the skin & sometimes are so sensible as to bleed for the slightest touch while at others they are but little sensible.

Treatment. Pressure by means of a roller or adhesive plaster is to be used. When the pressure proves insufficient to repress the fungus apply the caustic. If the ulcer be small, to the whole surface at once; if large, only to a part.

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Astringent applications are often useful, as powder of Galls & preventing the necessity of using the Caustic. When the Fungus is destroyed it returns to the state of a simple ulcer, & is to be treated accordingly.

Oedematous Ulcers.

These are Ulcers situated on an Oedematous limb. & are tender & painful. There are granulations of a purple dark colour & apt to bleed. Dark spots exist in the Ulcer.

Treatment. In general the same as for the inflamed ulcer. viz evacuations &c. These are however sometimes not indicated. The limb sh^d be elevated. After the ulcer is br^ot to the state of a simple ulcer, bring the sides of it together, & apply adhesive plaster, bandages &c.

Sloughing Ulcers.

It sometimes depends on local causes for it occurs in one leg while the other is free from any such appearance. Sloughing ulcers appear to arise from weakness of the Granulations, the Cic-

* And a cluster

trix becomes black & sloughs. Sometimes one part of the ulcer is sloughing while the process of forming new skin is going on in another, but generally the whole of the ulcer sloughs at the same time. It is always attended with considerable pain, & with inflammation in the contiguous parts.

Treatment. The remedies are nearly the same as for mortification, nourishing diet, Cordials & tonic medicines. Bark, Quina, &c are to be used. A light poultice sh^d be applied. I say light, for it must not be oppressive by its weight. The application of a Poultice made by grating Carrots in milk, hastens the separation of the sloughs. Fermenting poultices with charcoal are used with advantage. When the sloughs have separated, the sore is in the condition of a simple ulcer. If Maggots form in the ulcer, a wash of nitric or muriatic acid very much diluted will destroy them. Under this head it is proper to notice a variety in this species of ulcer wh^{ch} occurs in weak constitutions such as are debilita.

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led by strong drink. The granulations arise, new skin is formed &c. but they are constantly destroyed by ulceration taking place w^{ch} often enlarges the surface of the ulcer. —

Treatment Strengthen the Granulations by a stream of Cold water, & prescribe nourishing Diet. Bark &c. The stream of Cold water for strengthening granulations, when a little lunar Cautic is in it, it is not escharotic. Ung. Citrin: & the application of lint soaked in an infusion of Galls, to w^{ch} Laud: may be added, are both very beneficial.

Indolent Ulcers. — The edges are hard tumefied & elevated & there is no disposition to Cicatrization. The elevation & ballosity of the edges are the consequence of frequent inflammation & extravasation of the Lymph w^{ch} remains unabsorbed.

Treatment. If inflammation occur remove it by the usual remedies. The edges sh^d be completely removed by the knife, & lunar Cautic applied to the Centre. This reduces it to the,

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State of a simple ulcer. If for the fears of the Patient or for other causes, the knife cannot be employed, Caustic must be used with firm pressure. Mr Baynton says adhesive plaster answers the Purpose. Caustic alkali is the best, & it is often necessary to persevere in its use to the Centre of the ulcer for a considerable time. Mercury when given till it excites Syphilis is often very useful, it disposes the System to a healthy action. & thus possesses considerable powers in the cure of ulcers, even where there is no venereal taint. Many remedies have been found useful in these ulcers, as gastric juice, diluted Vetricolic Acid Red Precipitate &c &c

Carious Ulcers.

In these a portion of bone being dead it gives the stimulus of dead matter to the contiguous parts, thus preventing healthy action & keeping up irritation - They cannot heal till the bone is extracted. A bone in a carious ulcer is so surrounded with granulations, that when loose it is not

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very easily moved about: & you can't judge by
that - Treatment. Extract the dead portion of
the bone as soon as it becomes loose. When out
of sight we may know whether a portion be loose
by pressure on the bone thro' the fistulous open-
ing - If the bone be loose, pressure upon it will
produce pain & Hemorrhage from the detached
bone pressing upon the granulations. If the
bone is not detached, press with the probe upon
the bone as hard as you please, & no pain will
be excited, & the motion of the loose bone can't be
perceived. When we are satisfied that a part
of the bone is loose it must be extracted. In
order to do this the fistulous opening must be
dilated. It may be effected by a Sponge Tent
&c. & when this is competent, it is preferable to
dilatation with the Scalpel as by this there is
danger of wounding the blood vessels of the part.
The opening may be enlarged sufficiently by the
Sponge tent to admit the introduction of the

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bone happens, by w^h the detached bone may
be broken into small fragments & extracted. When
the bone is extracted, the ulcer generally heals. -

Varicose Ulcers.

These are Ulcers attended with a Varicose state
of the veins. The Trunks & Branches of the
veins being distended beyond their natural
size, prevent the healing of the Ulcer w^h in ap-
pearance is similar to the Indolent. -

Treatment A laced Stocking or light Ban-
dage must be constantly applied, for if left off
the ulcer w^h was healed by their use often be-
aks out again. When the Bandages &c. prove
ineffectual, the passage of blood thro' the enlarged
vein, is to be prevented by putting a ligature
on it thus obliterating its cavity. When the
Vena Saphena. Minor or Posterior, is varicose,
along with the Vena Saphena, the disease is
generally severe. When the Vena Saphena
becomes Varicose, put a ligature on it, where

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it runs along the inside of the knee joint. Mr
Horne describes the operation. He directs that the
patient be made to stand, w^h will cause a disten-
tion of the vein. But this Dr Physick finds to be
a very inconvenient posture for the Patient. He is
accustomed to apply a Tourniquet on the thigh, not
so as to compress the Artery, but with sufficient
tightness to obstruct the passage of the blood thro'
the superficial veins, & then to lay the patient
down. I proceed to the operation. I make a small
roll of linen or lint, lay it down on the vein &
include the vein & that both in the same knot. So
that by introducing a small Piston or pair of Scis-
sars thro' the ring of the ligature I can easily
divide it.

The inflammation in consequence of the opera-
tion is sometimes considerable. The ligature gener-
ally comes away in 8 or 12 days. But it's best
to remove it about the 5th day. When any mal-
lign vein continues the ulcer, it must be treated
in the same way. The ulcer generally heals

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like a common ulcer after the vein is thus secured. Some Surgeons instead of applying Ligatures divide the vein completely, & then apply a compress with sufficient tightness.

Ulcers attended with or preceded
by particular diseased action either general or Local.

Cancer, Chancre, Ulcer after Bubo &c. If it can be done it is proper to extirpate completely with Caustic or a knife. This reduces it to the state of a simple ulcer. When ulcers depend on constitutional affections, the Constitution must first be remedied, or the ulcer will never heal. These Ulcers are too extensive to be particularly treated of in this place.

There is a Species of Ulcer like a Bubo, &c. which follows the Venereal. When the ulcer goes on, the edges appear as if they were worn eaten, & the part first eaten heals. It resembles the ring worm. The knife & Caustic are to be used, the last is the best.



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Burns & Scalds.

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Fire when applied to the body produces different effects according to its intensity & time of continuance. —

1st Its first effect is that of inflaming the surface of the true skin, & the separation of the Cuticle.

2^d Inflammation & evencation of the Cutis.

3^d Destruction of the life of a part, & the production of an eschar. These effects vary according to the medium thro' w^{ch} heat is applied.

1st According to the degree of heat Burning coals & melted metals, & streams of vapour, destroy the life of the part. —

2^d Situation More dangerous in joints, than in other parts, & more dangerous in the head than in the extremities. —

3^d Old people & Children There is more danger from mortification in these. —

4th Its extent & depth. Burns of but small extent & considerable depth, are less dangerous than those of large extent & superficial. —

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When Burns destroy the Life of the Part; little or no pain is felt till 2 or 3 days after, when inflammation for deperating the eschar is excited. In extensive burns the pulse is weak & almost imperceptible, the extremities cold, patient insensible, Debility, Fever, Delirium, Mortification, & extensive Suppuration, & Ulceration, with Heel & Tetanus succeeds.

Treatment. This is General & Local. The Constitutional Remedies must be varied according to the State of the system, as indicated by the pulse. Some recommend the Antiphlogistic plan - "Of Ruy". It is in every instance, even before any inflammatory symptoms have appeared. This however may do much harm. - When inflammation commences, evacuations are highly proper, & not before. In some instances the system is so debilitated that inflammation does not take place, here prepare the invigorating plan, Cordial diet, wine, Bark, Pills, &c. &c. & be used, with opium to relieve the pain, till inflammation

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sufficient to separate the Echin is excited Inflammⁿ
is too high, it must be checked by Veg. &c.

The Local Remedies has been various, by
means of Linen dipt in Brandy, Sp^t Wine, Cold wa-
ter &c all have been found useful. Where the Burn
is small, holding it to the fire has been benefi-
cial. Where the Cuticle is detached Lentreed oil & lime
water is useful. It acts as a palliative only, as do also
scraped potatoes & salt, Cold water, &c, Lead water,
Ung^t Saturn &c. Of late very stimulating substan-
ces have been applied with excellent effect As
Sp^t Wine, Sp^t Turbith, Volatile alkali &c One of
the best applications is Ferri's Ointment composed of
Ung^t Marsilion, softened with Sp^t Turpentine.
Care must be taken in the application, that it be not
suffered to touch any of the sound parts, as it will
speedily inflame them. When applied to the un-
red parts it relieves pain. This rule applies with
equal force in all cases when stimulating ap-
plications are employed.

Nature of Burns The inflammⁿ
excited by fire is of a peculiar nature, & different from
the common inflammⁿ. Infer this 180

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1st From the pain being different. res. of a burning nature.

2^d The ulcer succeeding is fungous & difficult of cure. —

3^d The cicatrices having so great a disposition to contract, thus very often inducing deformity

4th It is cured by remedies w^{ch} w^od aggravate common inflammation. Great care is requisite to prevent the formation of adhesions in pendulous parts. Case, when thro' inattention after a Burn, the Penis adhered to the Scrotum, & the Scrotum to the thigh. When the fingers are burnt, dressings must be kept between them, otherwise they will unite. Splints sh^d be applied to keep the parts at rest, & in a proper situation. —

Contraction of the limbs after burns may often be prevented by the application of Splints. If the burn be on the back of the hand, the splint sh^d be applied to the Palm.

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Fractures.

By a Fracture is meant a complete solution of the Continuity of a bone. This is generally effected by external violence, but sometimes particularly in Fractures of the Patella, by the action of the muscles. It is a remarkable circumstance that drunkards very rarely have their bones broken, this is probably owing to all the muscles being relaxed. When a person is not in a state of intoxication, probably for the muscles being in an opposite state, the bones are then most easily fractured. Falls on the ice are very apt to induce fractures of the bones. When any of the bones of the extremities are fractured, the pain is generally considerable, for the ends of the divided bones pressing upon & irritating the soft parts, there is more or less distortion of the limb, & it is generally shorter for one portion of the fractured extremity of the bone overlapping the other.

Fractures are either Simple or Compound

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4. Such as are Compound at first may sometimes become simple by proper treatment in the course of the cure. A simple fracture does not communicate externally. In the compound fracture the bones are pushed thro' the skin, & the fracture has a communication externally thro' the wound. When the external wound is small, by applying the adhesive plaster &c. it may often heal by the first intention, & when this happens the compound fracture is changed to a simple one. In simple fractures, the object of the Surgeon sh^d be to place the ends of the bone in complete apposition, & to keep them so till union is effected.

5. Fractures of the limbs, if we place the limb so as to relax the muscles, there is seldom any difficulty in replacing the extremities of the fractured bone in their natural situation. As soon as this is done, the pain, convulsive twitchings &c. generally cease immediately.

If the ends of the bone cannot be replaced without,

[Faint, illegible handwriting in cursive script, likely a list or journal entry.]

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bleed till the patient faints, & then you may re-
 place them very easily. The ends of the Bones are
 retained in apposition by Splints & Bandages. -
 Splints are of various kinds, of Leather, Wood &
 Pastelboard, but I think the last are the best; because
 when soaked in warm water & applied they read-
 ily accommodate themselves to the shape of the
 limb. After they have received the proper shape
 they sh^d be dried previous to our placing any
 dependance on them for answering the purpose
 of the Bone. Splints sh^d be constantly applied
 till an union is effected. It sometimes happens
 that we are not called to cases of fracture till con-
 siderable inflammatⁿ swelling & heat have taken
 place; here previous to making any attempt to
 replace the ends of the fractured bone, moderate
 the inflammatⁿ. By low diet, & apply poult-
 ices of bread & milk with Sack: Sat: At the
 end of 8 or 10 days it is always proper to remove
 the dressings. & examine whether every thing is
 right; if not, it may soon be remedied. -

[Faint, illegible handwriting in cursive script, likely a list or ledger entry.]

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In cases of fracture, it is generally necessary to keep the patient to low diet. It is preferable to any other mode of depletion in fractures when evacuations are necessary. Lurgine is very convenient, keep the body gently open by some mild laxative. Many people are so weak when they receive fractures, that evacuations of every kind are forbidden, here let the patient have nourishing diet &c. After the bone is set, & the bandages applied (w^h sh^d not be applied too tight so as to obstruct the circulation, for mortification &c w^d ensue) much swelling occurs, the bandages must be removed, for by pressing the soft parts with force against the ends of the bone, may produce ulceration, & thus convert a simple fracture into a compound one. The time necessary for a union is varied by several circumstances. Bones of young people unite in a shorter time than those of old persons. In fractures of the jaw or ribs the bones will unite sooner than in fractures of the bones of the arm. When a fracture communi-



cated with the cavity of a joint. It requires longer time for the bones to unite. Those persons are in an error who suppose that the bones of pregnant women will not unite, for they unite as readily as fractures in men. In some Constitutions the bones do not soundly unite at all, but a kind of joint is formed, w^h allows of some degree of motion, no pain being excited thereby. The ends of the bones are really tipped with Cartilage. In this case it has been proposed to cut off the ends of the bones forming this joint. This is a very cruel operation, & always necessarily induces a shortening of the limb. In one case w^h came within my observation, the operation was performed but without success, & the patient was obliged to submit to amputation to save his life. I have never performed this operation, but I have often succeeded without it; by causing the patient to use exercise by w^h the ends of the bones were rubbed against each other & the surround^g parts, exciting some pain & inflammatⁿ w^h produces copulable.

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Lymph & the parts are stimulated to form bone,
& thus effecting an union. When inflammation
is excited by simple incision down to the bone, the
discharges are with difficulty retained on acct of the
granulations. In one case I succeeded by passing
a seton between the fractured ends of the bone w^{ch}
was continued 12 weeks before any benefit was de-
rived. I suspect in old people it will be found ne-
cessary to continue the seton in the part a much
longer time. See the "Medical Repository" of New
York. Simple Fractures are united either by the
first intention or by the Adhesive, inflammatⁿ.
Blood is shed on the extremities of fractured bones,
w^{ch} coagulating soon becomes vascular, & in
time of a cartilaginous hardness. This process
for the formation of Callus. 2. Compound
Fractures, the blood flows out of the wound, & the
bond of Union is lost. Inflammation is generally
so great as to prevent the fractured bone from uni-
ting by the first intention. Suppuration takes
place, & the ends of the fractured bone die. Com-

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Compound fractures differ in their circumstances - Sometimes the sharp ends of the bone denude the soft parts in a way similar to simple incision. More frequently there is considerable laceration. Sometimes, as in case of a loaded Waggon passing over a limb, there is great contusion of the soft parts, & the bones generally much shattered - In this case, consider whether to amputate immediately. Compound Fractures are sometimes attended with profuse hemorrhage. The first thing to be done in this case is to apply the Tourniquet - Next, if the bleed^g vessel can be seen, apply a ligature over it immediately. If the hemorrhage proceeds from the Orifice of vessels w^h cannot be detected, some have thought it necessary to amputate the limb, but I have never found it necessary, the hemorrhage may generally be stopped without it. In the case related by Croock, of hemorrhage from an Artery within the bone, it was as large as a goose quill he used perpendicular pressure, so as to press the sides of the Artery together. I think the hemorrhage



might have been stoppt by Cedar Plugs introduced between the Cony Channel & the outside of the vessel. If the Orifice of the Bleeding vessel cannot be seen, the Hemorrhage may possibly be restrained by tying up the trunk of the Principal Artery, supplying a limb, as in case of Aneurism. It is certainly better to try this, than so precipitately to amputate the limb. The case of tying up the Popliteal Artery in Aneurism, proves that it is safe to tie up an Artery.

2^d. Mortification taking place to a considerable extent is thought to be another Circumstance justifying amputation. The operation sh^d never be performed while Mortification is progressing, as in that case the disease w^d in all probability continue on the Stump. But after the separation of the sound ~~from~~ the dead parts, the operation may be performed if necessary. generally there is nothing more left for the Surgeon to do than saw thro' the bone 3^d.

3^d When Suppuration is very profuse, wasting the strength of the patient. & attended with

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Hectic, it is proper to Amputate.

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If Amputation is necessary in cases where the extremities of bones forming joints are much shattered. In most cases of Compound Fracture the limb may be saved, with this view replace the bone as in simple Fracture. There is sometimes difficulty in doing this. I have never found it necessary to dilate the wound, rarely or never necessary to saw off the sharp ends of the bones. If the Muscles resist the reduction of the bone, it may be overcome by *U. ad deliquium Animi*. If extraneous bodies can be easily removed, it sh^d be done, but if not, avoid searching for them. If the wound be small, apply adhesive plaster, when wet with blood, a scab is formed, & the wound will heal, or if the wound be extending small, a plug of dry lint. It is at times impracticable to bring the bones into contact, or if from inflammation & tension the adhesive plaster can't succeed & the sides of the wound open, & a clot of blood lies in the cavity, projecting a bit.

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the way out. Many of you will be disposed to extract this Clot, but it never sh^d be done, as it w^d produce suppuration & other bad effects. --

Uniting by the first intention changes the Compound Fracture to a simple one, this frequently succeeds & no inconvenience results for the trial I w^d therefore recommend to you to endeavour to unite compound fractures by the first intention. When they do not unite in this way, inflammation is generally very violent, or suppuration. The Bones also sometimes die for this cause. Here repeated U. sh^d be used as often as necessary. Apply a soft poultice of bread & milk twice a day. After inflammation is removed, if weakness occurs, some medicines are necessary. If mortification takes place it is to be treated as described when speaking of mortification. If attended with active pulse U. sh^d of great weakness occurs, Bark, Wine, &c. & Blisters to the part. The mode of dressing compound Fractures I shall demonstrate to you hereafter.

We come next to Fractures of Particular Parts

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Bones of the Nose. The Bone
seldom fracture directly in front, but generally
on one side. The Fragment broken off being depressed,
in some measure impedes the passage of the
Air into the lungs, & affects the Voice. All that is ne-
cessary to be done is to elevate the depressed Bone with
a firm probe, & retain Moisture over the part for
a short time by the application of ad: plaster. The
probe may be a piece of wire with a round end to it.
This is to be put in the Nostril. A director or Female
Catheter are better. Put it inside of the nose & press
the Bone with y^e finger on the outside in its proper
place. No muscles here are sufficiently power-
ful to displace the Bone again by their Action.
In 2 weeks the patient will do well.

Fracture of the Lower Jaw.

This occurs in every part of the Bone, On one side
or the other, at the Symphysis, or between the
Chin & Angle of the Jaw, in an oblique direction
generally. Sometimes the Condylar process is
fractured, but the Coronoid never, as it is defended
by

+ The upper ^{mouth} ^{piece} keep them in
without being.

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By the Temporal Muscle & the Zygoma. I have had 2 cases of a fracture of the neck of the Condyle of the lower jaw. In one case the condyle was dislocated, I pushed out at the Zygoma it was however easily replaced. The fragments are always displaced upwards & downwards, never before or backwards, one portion ascends the other descends. You may ascertain the distance of the fracture by the grating of the fragments. By observing whether the teeth be on a level. When the bone is fractured the teeth on the two fragments are not on the same level. Frequently some of the teeth are forced out or loosened, especially just at the point of fracture. It has been recommended to extract all the loose teeth immediately attended but this is a practice w^h I warn you against, it converts a simple fracture into a compound one. Instead of extracting them tie the loose teeth to the firm ones & opening of it gives no pain. The teeth will then be on a level, & adapt themselves to those of the upper jaw.

It is easy to replace the fragments, grasping

* There is generally a dislocation of the bone at the place of fracture, & the Spinal Marrow is then compressed. It is also injured for the vessels being ruptured pouring out their contents into the fracture, causing an accumulation of blood in the cavity of the fracture & compresses the Spinal Marrow. Dissection shows us that the Spinal Marrow is also injured by specula of bones being forced into it. Paralysis of the Spinal Marrow was once produced by a severe contusion on the back without any fracture of the bone, for a blood vessel was ruptured & its contents shed on the Spinal Marrow. When there is a dislocation or fracture of the vertebrae so as to compress the spinal marrow death must ensue; but portions of the vertebrae may be broken without danger, as for instance if a bullet strikes the transverse process. In fractures of the lumbar vertebrae, death often ensues for the pressure on the soft parts arising by being so long in bed. Mortification is produced by this constant pressure, the circulation is obstructed, an ulcer is formed which produces hectic & death. It has been advised in this case of fracture

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them & raising the teeth to a level. The upper jaw
being the best splint to the lower one, all therefore
that is necessary to be done is to press the under to the
upper jaw. Apply a roller round the chin & head so
as to keep them in that situation. This answers even
when the condyle is fractured. I generally put a piece
of adhesive plaster on leather round the jaw, as it
saves the skin in the pressure of bandages. A 4 headed
roller has been proposed, but the simple one is the
best. It sh^d be passed below the chin over the head
& round the sides. The Patient sh^d not speak, & is to
be kept on liquid food till the Fractures consolida-
ted. When there is any wound apply dry lint or
adhesive plaster.

* Fractures of the Vertebrae.

Fractures of the Vertebrae may occur in any part from
the Atlas to the Coccyges. Occasioned by falls on the
back or by heavy bodies falling on the back.
When only the Processes are broken off, probably lit-
tle or no inconvenience will arise, but when the body
is fractured communicating with the Medulla Spi-
nalis, it is pressed upon by effused blood, & Paralysis

ture to extend the spine so as to bring the surfaces of the bone together. In a case that came under my care of a fracture between the 5th & 6th Cervical Vertebrae I tried it. in 2 hours I was much pleased for he moved his hands, w^h he had not done before. In the common time however (3 days) he died.

The Patient is unable to evacuate the contents of the Rectum or Bladder. There is sometimes an involuntary discharge of Feces, but never of Urine. The ^{Elasty} Catheter ought then to remain in constantly & fasten it by a plug of Cork. That is plug up the end of it—

of all the parts below the fracture takes place. When
the fracture happens in the neck above where the
Phrenic Nerves go off, or about the 3^d Vertebra
of the neck, instant death is the consequence from af-
fecting the Diaphragm. Very little can be done
in cases of fracture of the Vertebra. If the fracture be
in any of the Cervical the Patient generally dies in
3 days after the accident. If the fracture occurs
lower down, the patient lives longer, but in a mis-
erable situation. I never knew an instance of re-
covery. In examining fractures of the Cervical Ver-
tebra, guard against turning the Patient upon his
Back. Because respiration is carried on exclusively
& entirely by the Diaphragm. The other muscles
concerned in respiration being Paralytic, and
when the Patient is upon his belly, the intestines
heaving up prevents the Diaphragm from Des-
cending & contracting itself into a plane, and
speedy death is the consequence. The patient that
died in the Hospital for a fracture of the Verte-
bra appeared to die from Nerves accumulating in



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the Trachea, & from the inability of the Respiratory
Muscles to cough it up.

Fractures of the Ribs

These frequently occur & generally about the middle.
There is not much displacement of the fragments.
A displacement upwards & downwards is hardly pos-
sible, for they are supported by the Intercostal mus-
cles. For this to be the case the ribs must pass
either outwards or inwards as it respects the Ca-
vity of the Chest, & that I never saw. If this were
to be the case it wd be proper to make the patient
draw a long breath. In fractures of the ribs when
the patient breathes, there is a sharp pain at the
place of fracture. By placing the hands over
the part when the patient coughs, crepitation
will be felt. If the Lungs are injured the pati-
ent generally coughs up mucus mixed with blood.

Treatment Apply a broad roller round &
round the ribs & Thorax, pretty tight, so as to pre-
vent the motion of the ribs in respiration, & in-



Since the necessity of the Lung cannot be exclusive
 by by the Diaphragm. Over this roller or band-
 age, two Shoulder Straps sh^d be pinned on to pre-
 vent its sliding. When this roller is applied, pain
 & immediately ceases. It sh^d not be removed till
 union is effected. At times the cough returns, &
 there is considerable pain from inflammation. It re-
 sembles the Pleurisy. It is to be treated like it. Low
 vegetable diet &c. are proper. Mucilaginous substan-
 ces &c. are proper to allay the cough. I have been
 surprised to see how efficacious they are. The Mu-
 citage of G. Arabic, a little Laud: & a small quan-
 tity of Antimonial wine, form an excellent mix-
 ture. Sometimes when the lung is wounded by
 the fractured rib, the air escaping from the wounded
 rib & insinuating itself into the wound of the Pleura,
 inflames the Cellular Membrane, constituting the
 disease called Emphysema. A compress wet with
 brandy firmly bound round the cellular texture
 & closing the orifice is the proper mode of Treat-
 ment. When this inflammation of the Cellular



Membrane is partial, & in the neighbourhood of the fracture only. Compress & bandages with the application of some mild discutient will cause the extravasated air to be absorbed & thus prevent further mischief. But when Empyema is universal especially if much difficulty of breathing occurs, it is necessary to puncture the side of the Thorax between the ribs to let the air out. This puts an immediate stop to the passage of air into the Puncture. This puncture sh^d not be made on the Cellular texture at the place of fracture and w^d convert the simple fracture into a compound one, but it sh^d be made between 2 sound ribs. The inflammation of the Cellular membrane of the Lungs will gradually subside, the air being absorbed & carried away. If any part is particularly oppressed, it may be punctured with a Lancet; thus letting the air out. Sometimes after the lungs are wounded by a fracture of the ribs the Patient has a very troublesome Cough here Demulcents & Opium in small doses are very beneficial. When Pneumo-

" by putting y^r finger on the basis of the Scapula
you will be sensible of a vacant place -

* The angle u^t is locked. If Hands Stationary
while the other parts follow the motion of
the arm

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the symptoms occur, the treatment is exactly the
same as for Luxation. Air. As low as the
fractures of the Upper Extremities & first
of the

Scapula.

Fractures of the Scapula seldom occur in any
other part than the Acromion. Sometimes the
lower angle of the Scapula is broken off by falls
on the part. When this happens the displacement
is always perceptible, the lower angle being pul-
led downwards & forwards by the Serratus Ma-
jor Anticus Muscle. It is painful to perform
the rotatory motion of the arm. Yet be doubt-
ful whether a fracture exists or not, let the
Shoulder & Scapula be drawn back after you
have placed y^r finger on the lower angle to as-
certain whether it follows the motions of the
rest of the Scapula, if it does not, the fracture
certainly exists. —

Treatment. As we cannot draw the an-
gle that is broken off to the body of the bone, we

* The Coracoid is scarcely ever fractured. It can only be done by a bullet. I never saw it. At times the angles are broken. The acromion is broken by heavy blows striking it or by severe falls. It is so thickly covered with soft parts that it is easy to feel the fracture. The fragments of the acromion may be pushed into their natural situation by the bandage already described, it is to be placed under the elbow & round the shoulder. Some soft substance sh^d intervene between the arm & belly, to prevent friction. The weight of the arm is to be supported by a bandage ^{under} ~~round~~ the elbow & round the shoulder. When the angle of the scapula is broken, by pulling the finger on the base of the scapula you will be sensible of a vacant place. The angle of the scapula is pulled downwards & forwards by the serratus & major Anticus. The angle is broken & stands stationary while the other parts follow the motion of the arm. The arm is to be placed so as to get all the fragments into apposition, & the arm is to be brought downwards with the fore arm forwards, & the Cross bandage passed round & round as already described.

must bring the body of the cone in contact with the angle I retain it so. This is done by carrying the hand of the diseased side into the opposite Axilla, & placing under the elbow of the affected side a Pad or Bolster in the form of a wedge, the Apex being in the Axilla. This wedge-like Bolster separates the elbow a little from the Thorax. ^{which is} Fix the hand in the opposite Axilla and the pad under the elbow by a roller ^{passed round & round} I prevent the contact of the skin of the Thorax & arm by putting linen between them, previous to applying the broad roller w^h fixes the arm to the Chest.

Acromion Scapula.

This is very liable to fracture from its exposed situation, & the fracture is generally transverse. *

Signs of a fracture of the Acromion. The part broken off is generally pulled downwards by the Deltoid Muscle & weight of the arm. The arm lies by the side of the body motionless, & there is considerable pain on elevating it. If removed

See one leaf
x Some soft substance sh^d intervene be-
tween the arm & belly to prevent friction.

from the trunk of the Fractured Ampophy-
 ses will be perceptible, depression on the top
 of the Shoulder, & the Head generally inclined to the
 affected side. —

Reduce the Fracture by pushing the arm
 directly upwards. Retain it in this situation by
 applying a Bandage round the Shoulder on the
 sound side & elbow of the diseased, so as to sup-
 port the weight of the arm, supporting it in
 that situation. Fix it to the Thorax in such a
 way as to prevent the motion of the arm, other-
 wise the Fractured bone will be displaced. It
 is generally necessary to keep the dressings ap-
 plied for at least 6 weeks. —

Fractures of the Clavicle.

more frequently occur than of any other bone in
 the body. It is fractured most frequently about
 its middle & obliquely, & this obliquity slopes
~~for~~ without inwards & downwards. It rarely oc-
 curs in a contrary direction, ~~or~~ ~~for~~ within



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outwards & downwards. It is sometimes frac-
tured near its extremities, & sometimes trans-
versely. When fractured oblique, the bones are
displaced, but not so generally when transverse.
No displacement takes place when the fracture is
exactly opposite to the ligament that goes to the Ca-
rooid process of the Scapula. Nor no displace-
ment when the fracture occurs between the ligament
& the acromion process. In the sternal extremity
we find it supported by strong ligaments, & the
Sterno Clavido Mastoideus, so that it can't be dis-
placed much, on acct^l of the support wh^{ch} it re-
ceives from the first rib of the Sterno Clavido. It
can't be much displaced near the acromion
Scapula, as there passes a strong ligam^t from the
Caroid process of the Scapula to the Clavicle.
There is also little displacement on the Scapula at
vicinity of the Clavicle.

Signs of this Fracture. The Patient is un-
able to raise the arm, bends his body & head to
the affected side, or supports the arm of the affected

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side with the other, or by leaning upon a table if one is at hand. The shoulder is often Evidently depressed & drawn forwards & inwards. The humeral fragment of the fractured bone forms a visible protuberance above or on the side of the shoulder. You may feel a crack & the motion of the scapular fragments, & by pushing the arm up they may be replaced. Add to these signs some "rattle" are still more palpable to the senses as the mobility of the two broken ends of the bone, & the crepitation produced by their friction against each other. The depression felt at the point of the fracture &c. When the fracture is transverse & no displacement, to ascertain whether it exists, place your fingers on the extremities of the bones, while an assistant moves the arm in every direction. The motions will be communicated to the clavicle, & if a fracture exists, they will be most perceptible in the fragment next the shoulder, & will separate it from the sternal. The parts covering this bone are so thin that the fracture can be easily felt.

* The large end of the Pad sh^d be in the Axilla
w^h sh^d be secured by a broad roller round the
chest & ribs, & the arm by another roller, so that
the action of the Pectoral Muscle in displacing the
fract^{re} is counteracted. The arm is to be support-
ed by a bandage, & a hole cut thro' it for the
Thumb. Then apply round the shoulder & under
the elbow a roller to support the weight of the
arm. Between the Belly & Palm of the hand,
interpose pieces of linen for the patient al-
ways complains of the friction there.

Another bandage is to be applied over the whole
of these dressings

Treatment. In the treatment of this fracture, it was formerly customary to make an assistant place his knee against the spine, & with his hands pull the shoulder backwards. The Surgeon applied a roller underneath & over the shoulder. of the figure of 8 crossing on the back. I never saw any advantage for this. The fragments always overlap, & the bandages press too much. Desault's method is the best. The intention is to push the shoulder backward upward & outward - This being done by a compress or pad in the shape of a wedge in the Axilla by bandages to fix it. To fix the arm immovably to the Thorax, & lastly to support its weight & After returning the Pad under the arm, I always feel the pulse to know whether the Artery be compressed or not. It is necessary to examine the bandages every day, as they are very apt to become relaxed. This is the more necessary in women, in w^h the slightest displacement induces deformity. In Fractures of the Clavicle the English do nothing more than apply figure of 8 bandages, but this does no good whatever.

* In applying the bandages, great care is to be taken not to apply them too tight, for fear of compressing the veins & Symplicates, thus causing swelling in the arm. To avoid this, French writers advise the hand & fore arm to be confined by a bandage passed upwards to the shoulder, so that all the parts may be equally pressed & supported. Before adjusting the fractured parts, commence with the bandage beginning at the hand & going to the elbow. The fractured bones are then to be put in apposition & the arm bent at the elbow joint. While the assistant is making the extension apply the bandage upward as high as the shoulder.

Fractures of the Humerus 210

These most frequently occur about its middle, they are generally oblique, sometimes transverse. There is some degree of displacement. The' seldom much. The lower fragment being drawn upwards by the muscles, & overlapping the superior. When the fracture is about the middle, Bandages and Splints are to be applied, to keep the arm in its situation & at rest. The existence of the fracture is easily ascertained. The limb will bend at the fractured part. There will be pain & Crepitation on motion &c.

Treatment When there is any displacement & Counterextension are to be employed. To make the extension an assistant grasps the arm above the Condyle, another assistant makes the Counterextension by gently drawing the opposite arm. A circular bandage is then to be applied * beginning at the elbow & go up to the shoulder. Over this, 3 pasteboard splints are to be applied. One on the outside, a short one,



inside, & one before. These are to be secured by bringing the remainder of the roller from the shoulder down again over the Splints & over the arm. The limb is to be bound to the body by a broad roller carrying it round the elbow, taking care to place a cloth between the fore arm & the body to prevent friction. This method of confining the arm to the body is preferable to supporting it in a sling. It is proper to remove the dressings & examine the state of the fracture in 8 or 10 days time, if any displacement exists, replace the parts, & reapply the dressings as at first. If the fracture be oblique the dressings sh^d be removed once a week regularly. At the end of 4 or 5 weeks the union is generally completed. —

The Humerus is sometimes fractured at its neck, & its upper & lower extremities. I have seen one head of the bone broken off only. Fractures occur at the lower extremity immediately above the Condyles, the Condyles separating from each other, by a longitudinal fracture in

* depression

other cases only one condyl is fractured, leaving the body of the bone complete. These fractures are not so obvious as when in the middle, the arm however cannot be moved in any direction without giving much pain. By running the hand along the bone, a considerable depression is felt below the point of the shoulder, & if the hand be put in the Axilla, you will there feel a considerable elevation or tumour. In general the lower fragment is displaced and pressed in towards the Thorax. The upper fragment returns to its natural situation, & immediately below it a depression is perceptible. Similar to the vacancy under the Acromion Scapula —

How a Fracture may be distinguished from a Luxation of the Head of the Humerus

1st By the depression being below the point the point of the shoulder. In a Fracture the displacement is lower than when there is a displacement for luxation. In a luxation of the Humerus

* Along with the Fractured Head of the Os Humeri there is generally considerable contusion of the soft parts around, & breaking the vessels causes an extravasation of blood - thus increasing the difficulty. But you may feel the top of the inferior fragment by your finger in the Axilla. -

X Extension & Counterextension are to be made by grasp^g the inferior fragment with one hand & then putting the other in the Axilla the fragm^t will be placed in apposition, while extension is also made. You are to prevent the inferior fragment from pushing inwards towards the chest by applying a pad of linen or flannel on the side of the Chest as high as the Axilla. The arm is then to be bro't towards the side & rest on the pad. —

there is a hollow immediately under the Acromion process. In a fracture where the head of the bone is connected with the Scapula, a depression begins at the upper fragment. The inferior fragment is always directed inwards towards the Thorax, as this accident generally arises from a fall on the part, causes the Os Humeri to be pushed inwards towards the Chest. *

2^d When passing the hand into the Axilla instead of the round head of the bone, its sharp ends will be felt -

3^d If the hand be applied to the shoulder & the arm moved, Crepitation will be perceived. If the fracture be very high up, the bone will be seldom much displaced. Its existence may be ascertained by grasping the shoulder & giving a Rotatory motion to the arm, when you will be sensible of Crepitation.

Having ascertained the existence of the fracture, it is not often difficult to replace the lower fragment by means of extension & counterextension. To make the extension

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11.
grasp the arm above the elbow. As soon as the
bone is replaced apply dressings to retain it.
With this view apply a square bolster immedi-
ately under the arm, & secure it by a roller to
the Thorax. The Bandage is then to be passed from
the hand to the top of the shoulder, in such a
way as to prevent swelling. As splints are
useful in keeping the inferior fragment steady
by pressing the Scapula above, they may be ap-
plied. Apply 3 of them & secure them by the
remainder of the roller brot down over them.
The arm is then to be bound to the side by a
roller round the arm & chest. The Bandages
are frequently to be examined, as there may be
too great Compression Union will take place
in about 5 weeks. -

A good deal of stiffness will remain for some
months after, with difficulty in raising the
arm up & throwing it outwards. When the upper
part of the arm is considerably swelled by Ec-
chymosis after injury just in the point of

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the shoulder, it is proper to suspect this fracture of the upper extremity of the humerus. You may generally feel the sharp end of the lower fragment in the Axilla. Dr Pagnon decidedly disapproves of the practice of Desault in making a large incision to let out extravasated blood. This practice is not only painful, but very prejudicial & quite unnecessary, as in most instances the extravasated blood will be absorbed. When this does not take place, all that is necessary to be done is to puncture with a lancet, when the extravasated blood (as Dr P believes is always fluid) will readily flow out.

Fractures of the Lower end of the Humerus are sometimes transverse just above the Condyles. Sometimes the Condyles are separated, & at others only one Condyle is broken off. If one Condyle be broken, you may move it without moving the body of the bone; if both, you will hear the grating. In transverse fractures of the Humerus at its lower extremity, the arm hangs just

x This is not all ways the
can

* One Splint is to be applied on the out, the other on
the inside. Then one over the Radius & the other un-
der the ulna

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above the Condyles, by rotating it, grating of the
bones will be perceived. When the Condyles are
separated, it may be made evident by pressing one
from above downwards, & the other in a contrary di-
rection.

Treatment. If there be any displacement
make a little extension & replace it. The Fore arm
sh^d be fixed, as the inferior Fragm^t will move
with it. The joint of the elbow is motionless - the
elbow is to be kept bent, as Anchylosis will take
place & the arm is more serviceable in this position
than when extended. Apply a bandage beginning
a little below the elbow & going up to the Os Hu-
meri, nearly in the form of a figure 8. Four
splints* are next to be applied - two in the shape of
a Carpenters square laterally. These sh^d be long
enough to project beyond the fingers, that all mo-
tion of the arm may be prevented. The two other
splints are to be applied, one in the bend of the el-
bow, the other in the posterior part of the arm. There
is no necessity for these to extend lower than the

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wrists. - These are to be confined by a Bandage
 beginning at the wrist & proceeding upwards. The arm
 is to be put over the breast & supported in a sling.
 Remove the dressings in 8 or 10 days to see if the
 parts are in apposition, & to give the elbow joint
 a little motion to prevent Ankylosis (I don't mean ex-
 tensive motion). In 18 or 20 days you may extend the
 arm. Union will take place in 5 or 6 weeks. From
 neglecting to keep the inferior fragment perfectly at rest
 a false joint is sometimes formed at the fracture.
 The mode of treatment here described, is to be employed
 in all the fractures that occur about the lower end
 of the Os Humeri, or in the separation of the Condyles.
 With all our care we find our arm disfigured, an
 acute angle being formed with the arm, & fore-
 arm above - it is formed below in a bow as it were.
 I say to prevent this disfiguration is difficult;
 but I once did it in a little girl. I applied the
 splints, bent the arm as above mentioned, but
 before union was complete, I extended the arm
 kept it so a little time by one splint above, and

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then below, taking care not to keep it so for fear of Anchylosis. Every 3 or 4 days I gently bent the arm, & by this means succeeded. —

Fore-arm.

The bones of the fore arm are often broken at the same place about the middle; or the extremities are broken & bent into a sort of angle. The two bones never ride on each other. On rotating the arm, the grating of the ends of the bones against each other is perceivable by the Surgeon. The bones are rarely parted & separated too far from one another, but not infrequently deformity arises from the fragments meeting each other at right angles. Right extension & counterextension will remove any displacement. One assistant takes hold of the arm just above the Condyles of the Os Humeri. The other takes the hand as if he were shaking hands. The muscles are next to be prepared between the ends of the bones to prevent their approaching each other. The Interosseous ligament prevents the bones from

* Splints not soaked in water will keep the fractured
extremities at a proper distance. —

being pressed too far outward. The flesh being
pressed between the bones, apply a radiated com-
press on the fore part of the arm from the wrist to
the elbow. The bandage must be loose, otherwise
it will press the fractured extremities of the bone
towards each other. Over this apply 2 stiff
board splints* one on the fore part of the arm,
the other on the back part, & retain them by a
roller. The splints must be long enough to reach
from the bend of the elbow to the ends of the fin-
gers so as to prevent the motion of the hand. Then
support the arm by a sling. The cure is generally
effected in about 4 weeks. Set the hand between
pronation & supination at the time of setting the
bones; otherwise pronation & supination the pati-
ent will forever after be incapable of performing.

One of the bones of the forearm is sometimes
fractured alone, the Radius most frequently. The
ulna is seldom broken alone, & when so, it is by
direct violence, as in wounding off a blow for a child.
The existence of this fracture is easily detected

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by the touch. The Treatment is precisely the same
as when both bones are broken. -

Fractures of the Radius occur most
frequently just above the wrist. The angular dis-
placement of the fragments forming a depression
on one side, & elevation on the other, particularly
near the joint of the wrist. There is an inability to
perform the motions of pronation & supination. These
are some of the signs of a fracture of the Radius.
Be careful not to mistake a fracture of the bone, for
a luxation of the wrist, as acute investigation is
necessary. In the fracture you may be sensible of
the motions of the wrist. The fractured bones of
the lower extremity move along with the wrist.
& there is motion at the fractured part. The angle
exists beyond the joint. The Styloid Apophysis
will be below the Deformity.

Fractures of the Olecranon
The Olecranon is often broken off, & is the conse-
quence of falls on the point of the elbow. The
fracture is generally transverse. The existence of

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This fracture is commonly early ascertained being so thinly covered with soft parts. A separation of the fragments is distinctly felt, & when taken hold of between the thumb & finger, the motion produces crepitation. The Triceps extensor muscle draws the short fragment towards it is attached upwards, producing between it & the lower one an interval more or less perceptible. The Patient is incapable of extending the arm. On moving the upper fragment from side to side a grating of the fragments will be perceptible. —

Treatment. Extend the Fore arm, & apply a bandage from the wrist to the Shoulder. A strong Splint reaching from near the Shoulder to the wrist sh^d be placed on the anterior part of the arm to keep it extended. This is not to be removed under 20 days, at this time the arm sh^d be gently bent & extended to prevent Ankylosis, which Motion & extension repeat daily till the cure is completed. Union takes place in about 6 weeks. Some writers recommend compresses over the Olecranon, but they are never necessary, for a Case = days

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age will keep the part in place until union is effected. In some cases the skin is thrown into folds or wrinkles, in this case the skin sh^d be pulled up, before the application of the bandages, to prevent its intervening between the fragments & bone. The splint is made either of Kingle or Pasteboard, when of the former, glue on a piece of linen, & let some tow intervene between it & the arm.

When any of the Metacarpal bones are fractured, there will be an angular projection on top of the wrist. After you have reduced the fracture, apply the dressings. All that is necessary to be done is to apply a roller & keep the fingers extended by a splint; extending far above the wrist to the extremities of the fingers.

Fractures of the Coronoid Process of the Ulna. I never saw but one case of this kind. It occurred in a Girl who fell from a chair on the palm of her hand. At first I thought it was a luxation upwards & backwards. I supposed so because I felt the Olecranon distinctly above &



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behind the Condyles. By extending & bending the elbow, the Olecranon passed ~~from~~ its situation, and I heard a Crepitation. On extending the arm again, the bones of the Fore arm was again luxated, & every time I heard a Crepitation, ~~from~~ wth Circumstance I have no doubt but that it was a fracture of the Coronoid process of the ulna, & when moved this crepitation took place. I bent the arm and kept it so till the patient recovered.

Fractures of the bones of the Fingers rarely occur, they result from immediate violence upon them. I've find much Bruising accompany them. Extension & Counterextension are to be made to put the fragments in their proper situation, & then apply a pasteboard Splint on the inside of the hand to extend the fingers bending the hand to the Splint. Recovery takes place in 3 or 4 weeks.

The fracture of the Finger more rarely occurs. A boy once broke his little finger in half by boxing. It may be mistaken for a Crepitation Luxation.



but the Crepitation will make the Fracture sufficiently evident. If sh^d be attended to in time, as the motion of the arm will be greatly impeded if the fracture be not properly adjusted. The hand will also be stiff & the Patient unable to shut it. A Castboard or Thimble Splint is also here to be applied, otherwise the motion of the fragments will delay the union & be productive of much mischief.

Fractures of the Lower Extremities.

Thigh.

The Os Femoris is most frequently fractured about its middle. Sometimes it is fractured near the lower extremity sometimes at the neck or upper extremity. When the fracture is transverse, its treatment is more simple, than when oblique, as the 'ves most frequently find them of the latter description. When the fracture is about its middle, it is generally oblique, the inferior fragment is pulled downward. The limb is often bent at the point of fracture. Pain is severe. There is considerable deformity in almost every case either for the frae.



tured limb being shorter than the sound one, or for its having a protuberance on one side, in consequence of the broken ends being externally displaced. In oblique fractures the limb is considerably shorter, 1 or 2 inches. This shortening of the limb occurs for the strong muscles surround the bone. When the fracture is transverse, & the 2 extremities have not slipped, there is no shortening of the limb. The difficulty is not so great as when the fracture is oblique. The limb rests on its outside. If any motion be given to the fragments, crepitation will be perceptible, & the muscles will be thrown into spasmodic or convulsive motions. The patient is unable to move the limb. Such are the signs of the existence of this fracture.

Treatment. Replace the bones. The point for extension is just above the ankle joint. for Counterextension the Pelvis. The fragments are generally replaced without much difficulty; the great difficulty is to keep them in their proper situation. To prevent the muscles from displacing them. & drawing up the lower fragment from the superior

When the fracture is transverse, the common dressing, such as are used in Fractures of the Os Femoris are to be employed, Bandages being passed from the knee to the hip over the common splints, the fragments will support each other. -

But when the fracture is oblique, the muscles being so strong, they draw the inferior fragment upwards & behind the superior, one riding on the other as it were. In this case some Apparatus to counteract the muscles in displacing the fragment is necessary. It has been proposed to fasten the upper part of the body to the head of the bed, & fasten the ankles between the straps. -

Mr Pott advised the thigh to be bent on the Pelvis, & the leg on the thigh. I never saw it succeed. As the patient lies on his side & must be kept so, so the body rests on fewer points, & must be very uneasy. The position of the Fragments is also changed when the patient moves which he is apt to do. This position cannot be continued longer than 24 hours. Another objection to Mr Pott's bent position, is that the Surgeon cannot be certain that the limb is accurately set, as he cannot compare its length with that of the other. The straight position of the limb is easiest after 7 or 8 days. This is proved by the testimony of a patient who was treated first in the bent & afterwards in the straight position of the limb. - The patient at the same time having the advantage of lying on his back. -

1st When this is attempted it is necessary to lift up the patient every time a bed pan is used. in this way danger is incurred of separating the fragments. -

The sack bottom sh^d be very light - at most
2 pillows

2^d The Pelvis is always rendered more or less crooked in order to retain the lower fragment & to counteract the action of the muscles effectually it is necessary to continue thro' the whole of the treatment the extension employed in reducing the fracture. This is very completely done by the Apparatus of DePault, as improved by myself.

The Patient sh^d be laid on a Hair Mattress & this on boards laid across the bedstead, a single pillow is to be placed under his head.

Three or four pieces of tape are first to be laid on the bed to be the Splints 2^d A Broad piece of cloth over these to wrap up the Splints 3^d A Bandage of Strips, one laid almost over the other, their edges just meeting one another (there must be a number of them) 4th 3 Splints of Cardboard or Shingle 5th Be provided with 2 strong bandages, one to pass on the upper part of the thigh at the tuberosity of the Ischium, the other over the foot. Silk Handkerchiefs will be best. When the Patient is placed on the bed, of course & Counterextension are to be used, to place

* In applying the long splint at 1st first be wrapped up in the broad piece of cloth at the Patient's Calf or. The splint when applied on the inside must be wrapped up in the other piece of cloth. In the large splint there are 7 holes at the upper extremity for the straps passing round the tuberosity of the Ischium to go thro' they are all to be tied on the outside. There is also a hole at the bottom, for the bandage to pass thro' which is tied to the bottom of the foot. The splints are to be secured by the tapes just mentioned. & then a bandage is to be passed round the Pelvis & round the splint to keep it close to the body. At 2^d be passed several times round & round,

the fragments of Bone in their proper situation.
 With this view pass the bandage under the thigh
 so as to make the Counterextension, while the as-
 sistants make the extension by drawing the band-
 age fastened to the ankle. The Surgeon then puts
 the Bones in apposition. When this is done com-
 mence the application of Stups for the knee up to
 the Hip. These Stups sh^d not be tight, just so as
 to make moderate compression, for they can have
 no effect in retaining the fragments of Bone. The
 bandage to keep up extension sh^d be passed round
 the foot on the ankle, fastened on the instep &
 tied at the bottom of the foot. 3 Splints are
 next to be applied, one very long* extending for
 the arm pit to some distance beyond the toes,
 the inner Splint must reach for the Groin to
 beyond the toes. The third Splint w^h is to be
 placed on the anterior part of the thigh, must
 be pretty broad, & long enough to reach for the su-
 perior part of the thigh to near the knee. Now
 fill up the vacuities between the Splints & thigh
 & leg, with folds of Flannel, or what is better, Caps



of chaff. Next wrap the junk of cloth round the
 splints to keep them ^{from} slipping up. Then tie
 the tapes over the whole. It is best to apply a broad
 bandage round the hips & lower part of the back,
 & round the external splint to keep it & the Pel-
 vis ^{from} separating. Prevent this broad bandage
^{from} slipping up by pinning it to the Handkerchief
 for counterextension on the affected side. On the
 other pass a strip of linen between the thigh, and
 pin it to the broad bandage above. The Hand-
 kerchiefs for the extension & Counterextension sh^d
 be carefully examined every day, & tightened if
 necessary, for they often become relaxed & thus re-
 quire particular attention. If the muscles pro-
 vidently resist the extending force, the surgeon sh^d
 not be too solicitous to extend the thigh com-
 pletely in the first instance, by drawing & after-
 wards keeping up the extension, the muscles
 will give way, & by tightening the bandages when
 over they become relaxed, in 2 or 3 days the
 limb will be found as long as the other. It is not
 necessary & will be exceedingly wrong to draw the



extending bandages tight at first. The consequences of doing this will be excoriation, inflammation & gangrene. John Bell has written against the Apparatus of Desault for maintaining permanent extension in fractures of the thigh, but he happens never to have used it. I have had a great deal of experience of its efficacy. It effectually prevents the shortening of the limb, which is prevented by no other method at present employed.

My Bandages & Apparatus differ materially from Desault's. His splint passes from the Cresta of the Ilium to the sole of the foot, & his Bandage for Counterextension is fastened at the upper notch, just above the Cresta of the Ilium. My Splint extends from the Anilla, & is in the form of a crutch. By thus lengthening the splint counterextension is borne partly by the arm pit & partly by the groin, & thus dividing the pressure, we avoid the irritation that w^d take place when the splint extends only from the tuberosity of the Ischium. This is of no small consequence. When the Bandage is borne only between the



legs, the pressure is so great as to produce pain, ex-
 coriation & at times death of the parts, for the
 part sloughing leaves an ulcer, & we are obliged
 to abandon this mode of treatment. Since I
 have lengthened the Splint, I have had no com-
 plaints of the pressure of the Bandage between the
 legs. Another advantage attending the long
 Splint is that the 2 holes thro' w^{ch} you pass the
 handkerchief for counterextension are higher up
 towards the arm. Now in the other Splint the
 holes being lower, the bandage crosses the upper
 fragment very obliquely, & with so much force, that
 the bandage on the upper part of the thigh,
 draws the upper fragment directly outward, thus
 preventing the approximation of the fragm^{ts} of
 the bone. When the bandage is passed less oblique-
 ly, it acts more directly on the middle of the thigh,
 & has less effect in pulling the lower fragment
 outward. If very obliquely, it not only pulls
 the superior fragment outwards, but causes a
 displacement of the others. In the splint w^{ch} I



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advise as it reaches up to the arm pit, the holes attaching the bandage are considerably higher up, so that the bandage acts more in the direction of the thigh less obliquely, & also more in the direction of the trunk of the body. It acts more in this last direction if a strap be attached to it & passed round the body so as to make it act directly in the direction of the trunk. It presses on the Tuberosity of the Ischium & the Groin only, & acts directly on the limb not drawing the upper fragment outward.

There are 2 other objections to Desault's splint.

1st In making extension & counterextension, the bandage presses so as to press the foot strongly against the splint, so much so as to produce pain, excoriation &c.

2^d It turns the foot too much outwards drawing the side of the foot out. To obviate this Mr. Hutchinson has proposed that a Clock the ^o be fixed to the side of the splint. - To pads will obviate the pressure. I may mention here that one objection to the straight position is the weight



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of the limb resting on the most posterior part of
the heel, which gives pain. Causes the loss of sleep, &
finally if relief be not afforded, death of the part. When
a patient complains, covering the part with soft leather
spread on ad: plaster if that sh^d not answer, a num-
ber of such pieces laid one on the other, & a hole
cut thro' them, directly opposite the part complained
of. I have rolled up bandages of flannel, sewed them
under the heel, & cut a hole thro' them directly op-
posite the part complained of. I have rolled up ban-
dages of flannel, sewed them under the heel & cut
a hole thro' them as mentioned before. When the
bandage for making extension is first applied on
the lower part of the leg & over the ankle. The
muscles contract with an unnatural & spasmodic
force, & the force used to make the limbs of the
same length, & to draw the inferior fragm^t down
must be very considerable. Bandages have been
applied with so much pressure as to put a stop
to the circulation, thus producing unpleasant
consequences. Much force never sh^d be ap-
plied when the muscles contract in this manner
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only moderate tightness sh^d be used, the next day you may increase it. & so on at each successive day, for the muscles will readily yield to pressure & the extending powers. -

When the inferior fragment is fixed, cease with the extension, the bandage on the lower part of the leg & sole of the foot, gets too compact just like a rope, & the pressure on the part produces great pain. In this case a new handkerchief sh^d frequently be applied, or what I think far better, an apparatus w^h presses equally over the whole posterior part of the leg, & anterior part of the foot. This is effected by a piece of leather like a child's boot with laced strings. It does not cover the sole of the foot. Buckskin is the best kind of leather as it slips left. I had this contrivance made for a patient of mine whose skin was exceedingly tender, & who told me he was unable to bear the bandages any longer. After this leather was applied, he made no further complaints & suffered me to make what extension I pleased. Under

By taking hold of the foot & rotating it (one hand
being on the trochanter) it will appear to roll on
its own Axis. The Trochanter will describe a
portion of a Circle. The Radius of it is the distance
between the Acetabulum & the Outside of the
Trochanter. The limb rests on its outside & the
foot falls over. It may be placed in its situa-
tion by moderate extension, & by pulling the
lower fragment down to make the limbs of
the same length. you will hear a grating of
the fragments. —

the heel I applied layers of Flannel, & cut a hole opposite to the painful part.

Fractures w^h seperate the head of the thigh bone at the neck

Signs of the existence of this Fracture. The Patient will generally tell you he heard the crack, a sharp pain attends it, inability to extend the leg or raise it up. In almost every instance the limb is shortened, & the foot rests on its outside. By extending the limb the surgeon can bring it down to the same length with the other, & then upon motion being given to it, the grating of the fragments will be perceptible. If while the hand is applied to the great Trochanter, the limb is made to rotate on its axis, the bony protuberance is perceived to turn on itself as on a Pivot, instead of describing as it does in its natural state, the arch of a Circle, of w^h the neck of the Os Femoris is the radius. This sign may be perceptible when the fracture is at the

* The Toes in cases of Fracture are
~~is~~ always turned out. In
Luxation the toes are turned in.

root of the neck, the knee is a little bent, a severe pain accompanies the motions of Subduction when they are communicated to the limb. The great Trochanter is directed upwards & backwards.

These are the Symptoms, but they bear some resemblance to a luxation upwards & backwards, or upwards & forward, for the limb in this case is also shortened, but there is a striking difference in the foot being turned inward instead of outward, & the toes point inward & cannot be turned out. In luxation there is no crepitation, you rotate the limb with great difficulty, & if you succeed, placing y^r hand on the Trochanter it will describe a large circle, & does not rotate on its own axis. In the fracture it is very by moderate extension to make the limb of its proper length, but this is not the case in a luxation.

In fractures of the neck of the Os Femoris, the fragments sometimes interlock & no displacement or shortening of the limb takes place, these cases are very rare, & it is very difficult to de-

+ I must now impress on y^r minds the necessity of
one precautionary step. In the examination of
an injured hip before you attempt to ascertain
the extent of the injury, lay y^r patient down on a
flat surface, & take care that the Pelvis is straight,
for the motion of the spine may draw up the Pel-
vis & make one limb shorter than the other. To
ascertain this, feel for the Anterior Superior Spinous
process of the Ilium. & when found draw a straight
line across the body from one to the other process. If
it intersects the body at right angles, you may be
certain the Pelvis is straight, if obliquely, you may
be certain it is not so. I once saw, in an infirmary
abroad much embarrassment from not attending to
this circumstance. The same apparatus as already
described is to be used remembering not to pull the
bandages ^{*}too tight at first, but wait until the mus-
cles yield. If very Anxious. *Ad deliquium*
animi may be used.

* which makes the ^{extension} ~~extension~~

determine whether a Fracture exists or not. In all
 the doubtful cases apply the Apparatus for frac-
 tured thigh. If the Fracture exists, it cannot be
 reduced without it. & if it does not exist the pati-
 ent will be only put to temporary inconvenience,
 a few days will determine whether Fracture ex-
 ists or not. In fractures of the neck of the Os Fe-
 moris, the apparatus of Despault already de-
 scribed is to be applied & it sh^d be continued for
 at least 3 or 4 Mo^s before the patient sh^d be
 permitted to make any attempt to walk. I have
 always continued it 3 Mo^s first. When the frac-
 ture takes place without the Capsular Ligament,
 it unites as readily as fractures of any other part
 of the body. but if the Fracture occurs very near
 the acetabulum, bony union does not take place.
 On the contrary, a kind of joint is formed & the
 patient generally limps all his life afterwards.
 Severe Contusions of the buttock sometimes ex-
 hibit marks of fracture or luxation. Here after
 putting the Pelvis straight, compare the length of
 the limb. If after this any doubt remains, apply
 the



apparatus -

Sometimes the Os Femoris is fractured lower down, just above the Condyles. The fracture is generally oblique, & slopes far below backwards. It is sometimes transverse, when there is seldom much displacement. We most generally find the fracture oblique. in wth case the inferior fragment is drawn by the flexor muscles before upwards & backwards. A considerable space intervenes between the edges of the fractured surfaces, & the weight of the leg pulls the lower fragment down.

Extension & Counterextension sh^d be used. The same Apparatus is to be applied with the addition of a thick pillow or 2 pillows placed under the leg at the place of fracture to support its weight & prevent lateral displacement. & compresses of soft linen under the arm to counteract the weight of the leg in drawing the inferior fragment down. The inferior fragment is drawn by the leg to wth it is attached at right angles to the centre of the bone. The Apparatus of Desault must be applied. The Condyles are sometimes separated by a long



itudinal fracture. It is easy to ascertain it by taking hold of the Condyles & moving them in an opposite direction. you will hear a crepitation & be sensible of motion. I never saw but 2 instances. One occurred in a Maniac who leaped out of one of the upper stories of the Hospital & fell with his knee against a sharp edge of a wall. The superior fragment pierced the skin & penetrated the knee joint making a compound fracture. In such cases, a long splint, moderate extension, compression on each side of the knee & bandages over them (avoiding too much pressure) form the proper mode of treatment. -

Patella

These fractures are either transverse, oblique or longitudinal, of which last I never saw but one instance. The first occurs most frequently, & generally arises from some violence done to it without, or from the violent action of the extensor muscles which are inserted into it, as in jumping or dancing. The upper fragment is drawn considerably up =

+ Support the patients Head & Shoulders with a pillow or some Contrivance, & having the thigh bent on the Pelvis to relax the muscles, bring the inferior fragment towards the superior, extending the leg afterwards & keeping it so. The muscles being thus relaxed, feel for & pull down the upper fragment & bring it in contact with the lower. Commence ^{1st} bandage then just above the ankle, & continue it up to the ~~leg~~ knee. When thus far take care to pull up the skin, so that it may not get into folds or puckers, & apply 2 Compresses, one above the superior & the other below the inferior fragment securing them with a figure of 8 bandage, crossing in the Ham & going backward & forward over them. Cover the space intervening between the 2 Compresses with the same bandage & continue it over the thigh up to the hip. The Reasons for passing this bandage in this manner are the follow^g

1st By passing the bandage from the ankle to the knee the vessels of the leg are supported & Oedematous swelling prevented.

2nd The view in passing the bandage over the Pa.

ward by the extensor muscles, & the lower fragment being attached to the tibia, remains stationary provided the leg is not bent backward. By bending the thigh on the Trunk & extending the leg on the thigh, you will hear the grating. When the fracture is transverse, the patient falls & cannot rise. If placed on his feet he can stand or go backwards, but if he attempts to step forwards he falls again. As the bone is but thinly covered with soft parts, the separation between the fragments is sensible to the touch. This separation is increased by bending the leg, & diminished by extending it. If the fragments are not into contact, they may be moved in contrary directions, & the crepitation will be perceptible.

Treatment * Having ascertained the position of the fracture, place the fractured surfaces in contact. Apply a bandage beginning at the ankle & continue it up to the Thigh, taking care to have the fracture uncovered, & to prevent the skin from getting between the fragments. This being done bend the thigh on the Pelvis or Trunk, to

tella is to keep the fragments in contact &

3^d The intention of continuing it from the knee to the Hip is to compress the extensor Muscles & keep them in a quiescent state. -

The Splint sh^d have linen or leather glued to it & the whole covered with soft flannel. Secure the Splint by the bandage. In keeping the leg extended, a pillow is to be put under it. In 7 or ten days remove the dressings. They sh^d be frequently examined, for if the splint were to slip the fragments w^d be displaced. The Interval afterwards occupied by a ligament, is encapsuled by the superior being drawn up & pulled away from the inferior fragment. The Bandage & Compresses must be only moderately tight, or you will have irritation, inflammation & other bad effects. If inflammation occur, it is to be reduced by V.s. & other remedies. -

relax the extensor muscles w^h are attached to the Patella, & extend the leg on the thigh. Immediately above the upper fragment place a compress & retain it by a bandage something like the figure 8 carried above the superior fragment & below the inferior. When a sufficient number of these oblique turns of the bandage are made, make some circular turns, so as completely to cover all the soft parts w^h otherwise w^d swell very much. Next apply a broad long splint[#] under the leg to maintain the extension of the leg on the thigh. Taking care to put rolls of flannel or pieces of cloth, or some other soft substance between the splint & limb. Retain the splint by the bandage, attend to the bandage every day, & tighten it if necessary. The fracture generally unites in about 3 weeks.

Some mode of treatment is necessary when the Patella is fractured obliquely — But when Conge-
ludinally, nothing then is necessary to be done but to apply a circular bandage round the

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part. As the Fragments in transverse Fractures can rarely be kept in complete Apposition, union generally takes place by a Ligament w^{ch} is often of considerable length, proportioned to the separation of the Fragments. I have seen the uniting Ligament 18 inches long. In such cases if not properly managed. Patients will be lame for a considerable time, if not for life. The patient sh^d be encouraged to perform the motion daily, & his power of performing it will every day increase. Case of a lady who sat on a table not far fr^m the wall of the room, & completely recovered the use of her limb by kicking at it frequently. It is a very fortunate circumstance that a ligament forms instead of bone, as in that case the Patient w^d be incapable of performing flexion & extension, & he w^d always have a stiff joint.

Bones of the Leg.

They are generally fractured at the same place, sometimes both bones are broken at once, often

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transverse at other times oblique. The fracture may occur in the middle or at either extremity of the bone. When the fracture is transverse, there is little displacement especially in the tibia. When oblique, the inferior fragment is drawn upwards & backwards, & behind the superior. It is easy to ascertain the existence of this fracture, not only by the alteration in the shape of the limb, but it bends at the fractured part, at which place there is also much pain, & by pulling the superior fragment you will be sensible of crepitation, & can feel the place with y^r fingers.

Treatment. Place the limb in an extended position & let it rest on the pillow, but before you do this lay on the pillow a bandage of strips, on them 2 splints, & then another bandage of strips, one nearly over the other (as in fractures of the Os Femoris) all over the splints. After laying the Patient then on his Mattrass, raise the leg carefully, when the assistants are to make Extension & Counterextension. One



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with his hands applied to the heel & instep,
the other just below the knee keeping up the
extension. The bandage of strips is first to be ap-
plied, next splints of Pastebord previously soaked,
one on each side of the leg reaching from above the
knee to the sole of the foot. The splints sh^d extend
thus far, otherwise the fragments will not be secure,
the upper one w^d rest on the pillow, but the lower
w^d go from side to side. Tie the splints together,
above & below with the bandage of strips w^h is
better calculated for this purpose than tapes. To
keep the limb still more at rest. 2 splinters or
boards, one on the out the other on the inside of
the leg are to be applied outside of the pillow &
fastened by tapes. A bandage is to be passed in
this form X under the sole of the foot, & reaching
nearly up to the knee for further security In 7
or 10 days remove the dressings & see if the frag-
ments are in their proper situation. Support the
weight of the bed clothes by an Arch, a hoop from a
flour barrel is very proper. In this way transverse

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fractures are very easily managed.

In Oblique Fractures of the lower of the leg, when convulsive motions in the muscles occur, in such cases it is necessary to keep up a permanent extension by means of Despaults Apparatus as improved by Dr Hutchinson. In this fracture there is a projection of the superior fragment forwards & the inferior backwards. There is also an Angular depression. First lay on the foot a pair of Strips say 9. It is very customary to lay a strip of muslin across these bandages & sew it to them, but this is improper, for if any derangement of the Strips sh^d take place, or if any one sh^d become wrinkled, if this strip were not sewed, you could remove it easily, an advantage w^h you are deprived of when it is

After applying the bandage of Strips, secure to the pieces of tape just below the knee on each side by a roller not very tight, then to be passed thro' the holes in the Splints for the Counterextension, between these splints & the leg inter-
pose

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pose Bags of Chaff. The splints sh^d extend ^{from the} knee to 8 or 10 inches beyond the sole of the foot. Each splint has a mortise in its lower end, & a cross piece of wood is passed thro' these mortises, & over it the handkerchief for extension is carried. This method of dressing is very convenient in compound fractures. If the wound is on the upper part of the leg, there is no necessity for moving the limb, the wound may be dressed without it.

Always make it a rule that the strips last applied sh^d be laid down first. The bandage of strips sh^d be passed over the limb, before the splints for extension & counterextension are applied. Four tapes 7 on each side are to be placed at the upper part of the leg, just below the knee & secured by a bandage. Then a bandage round the lower part of the leg for extension. The Buckskin answers the best. It is to be tied on the middle of the sole of the foot. The tapes on each side of the leg are to be placed thro' the holes in the splints to fix the upper part of it & to make counterextension. Bags



of chaff are to be placed between the leg and sides of the Splint, to fill up the interstices. Then pull the bandage round the lower part of the leg & sole of the foot for extension. Tie the bandage on the middle of the leg as it passes to one Splint to the other, to keep up the extension by, & secure the Splint by pieces of tape. This treatment is adapted to compound fractures, & when the upper fragment is drawn upward & behind the lower. The chief inconvenience this bandage has, is its compressing the vessels below the knee, & producing swelling there. In this case I use the long splint w^h passes over the tuberosity of the Ischium & Anus. After these dressings are applied, lay the limb on a soft pillow, & put it in a fracture box w^h answers better than the 2 boards I spoke of. The foot board w^h it has is an advantage. Some flannel sh^d be put over it. To keep the foot more confined tapes sh^d be passed thro' the holes at the foot, & tied to the foot. Another advantage it possesses is, that if inflammation



It^d occur, the board may be elevated, w^h ele-
vates the limb, decreases the flow of blood by the
arteries, & favours its return by the veins. The
bottom sh^d be scooped to fit the calf of the leg.

The Tibia. —

When the Tibia is broken alone there is sometimes
difficulty in discovering the existence of the fracture.
There is seldom much displacement as the Fibula
acts as a splint. Indeed a longitudinal frac-
ture, or a shortening of the limb cannot take place.
When the Fibula is broken alone the same oc-
curs. It is at times extremely difficult to tell
when the Tibia is broken alone, for the Patient is
often able to walk. There is pain at the place of
fracture, & if the Surgeon grasps the limb above
& below the place of fracture & places his finger at
the place of fracture where the Patient complains
of pain, the limb will bend there, he will feel
a separation of fragments & will at times hear the
Crepitation. There is no deformity in the limb.



I once had a patient who doubted so much of a fracture, that after I left him, he pulled off the splints & bandages, got up & walked about the room. He at last found his leg to bend, & saw the angle at it formed with his body.

Treatment The same as when both bones are broken. A bandage of strips must be passed from the ankle to the knee, & splints of pasteboard previously soaked in water applied on each side of the leg, & secured by the many tailed bandage. The leg is then to be put in the fracture box. The Patient recovers in 5 or 6 weeks.

Fibula. When the Fibula is fractured alone, it generally gives way at the part wh^{ch} is about $\frac{1}{3}$ of the distance from the external ankle to the knee. It frequently happens from direct violence on it, a heavy body falling on it, or from its being struck with a stick or stone. It is frequently broken just above its middle, but most frequently occurs from the violent abduction of the foot when it is turned out. The fragm^{ts} are driven



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in towards the Tibia, & there is a depression on
the outside. The ankle is altered in shape. This
fracture in many cases is accompanied with par-
tial luxation. The Astragulus being pushed out-
wards. There is a depression at the fracture, and
grating of the Fragments when moved.

To reduce this fracture one assistant makes
the extension with his hands placed over the foot, &
heel. The Assistant for the Counterextension takes hold
of the leg just below the knee. By the extension and
Counterextension, not only the fracture but the luxa-
tion also (if any existed) is reduced.

The Treatment is the same as when both Bones are
fractured. When the fragments are put in apposition,
the bandages must act on the foot for if they act on
the leg, they w^d be of no service. & if a displacement
took place we sh^d have an abscess & compound
fracture. The bandage of strips must be passed
loosely from the ankle to the knee, for if they were tight
they w^d push the fragments in towards the Tibia.
Having applied this bandage - 2 Splints are next.

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to be applied, one on the out & the other on the in-
side of the foot: wth must be broad & extend quite
as low as the sole of the foot for if the foot be not
supported, the fragments will have no support.
Secure them by another bandage of strips, & put
the leg in a Fracture box on a pillow. Union will
take place in 5 or 6 weeks. -

Over the bandages & Splints wth are used in
different fractures, it is customary to pour some
liquor wth moderates inflammation. I generally
use brandy & vinegar or Oil & vinegar.

When any of the bones of the foot are fractured
the treatment sh^d be precisely the same as for a
fracture of any of the Metacarpal bones al-
ready described

Sometimes much deformity takes place
after a fracture unskillfully set, & we are applied
to for the removal of it after bony union is effec-
ted. In such a case what is to be done? The prac-
tice of Surgeons has been to break the bone again.
I once did this & succeeded completely. The



Radius has been set in such an improper manner, that the patient could not perform the motions of pronation & supination. The limb considerably deformed for angular projections on one side. Perhaps it will be found that in cases of fractured Humeri it will be most frequently necessary to break it again. It would perhaps be proper in every instance to try to bend the Callus right by a Splint.

We come next to speak of Dislocations



Dislocations. —

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When any of the articulating extremities of a bone forming a joint is forcibly displaced & removed from its natural situation, it is said to be luxated or dislocated.

When this accident occurs, the motion of the joint is very much impeded, or entirely lost, there is great pain & an alteration in the shape of the part. The deformity is considerable. It is easy to reduce dislocated bones soon after the accident but in cases where the bone has been suffered to lie out of its proper situation for any length of time, its reduction is very difficult. In recent cases, the greatest obstacle to reduction arises from the violent involuntary contraction of the muscles surround^g a joint. The contraction of the capsular ligament by lessening the cavity of the joint causes a difficulty of replacement in the socket. The ruptured capsular ligament very seldom presents any obstacle to the reduction.



For overcoming the action of the muscles, low diet
 & moderate U. of flame been recommended. I have
 found U. of ad deliquium aureum to be the best.
 & most efficacious practice, & it is perfectly safe.
 I have generally drawn blood from both arms at the
 same time. As soon as the patient faints, all
 the muscles are completely relaxed, & the Bone
 may be easily replaced. Purgings, warm bath
 & Opium have been used, also different Mecha-
 nic powers, but they injure the soft parts & no-
 thing can be more safe than Bleeding. I first
 used it here. Dr. Monro mentioned it in his
 Lectures. Intoxication has been proposed to do
 away the action of the muscles. I have had it in
 contemplation to try what w^d be the effect of ex-
 citing Nausea by medicines taken into the Sto-
 mach, or by throwing Clysters of Tobacco into the
 Bowels. The muscles prevent the reduction some-
 times for several weeks, but afterwards they ac-
 custom themselves to their Natural Situation &
 cease to contract involuntarily. If the Bone be



suffered to continue out of its Natural Situation for some time, the involuntary Contraction of the muscles cease. The bone contracts adhesions to the soft parts surrounding the joint, & round the Cartilage, lifting the extremities. When this occurs, force by means of pulleys & is necessary to replace the bone. French writers advise force to be used on the lower part of the limb, but this wd. give too much to the joint. In using force take care to apply it in such a way as to act on the affected joint only. Let all the surrounding muscles be relaxed if possible. 4th

Luxations of Particular Parts

Maxilla Inferior. In luxations of the jaw, the Patient is unable to shut his mouth, the power of speech is lost & the saliva runs over the mouth. This bone is luxated directly forwards. It seldom occurs as a consequence of external violence, but generally happens when the mouth is suddenly opened very wide, as in yawning -



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Both the Condylod processes may be luxated at once, or only one of them. When luxated they are fixed in the Zygoma in the place of the other Condyls; or over the tuberosity at the bottom of the Zygoma. If the reduction is undertaken soon after the accident it is generally easily accomplished. The thumbs are to be placed over the molar teeth in the mouth, & the fingers under the chin. Then draw the jaw down ward sufficiently to dislodge the Condylod processes from under the Zygoma. The muscles will then draw the bone in its place, if not, assist to press it back with the fingers. At the same time the posterior part of the jaw is pressed down, the chin is forced up. This method has always succeeded with me. As the jaws are apt to contract spasmodically, as soon as the bone is replaced, it will be proper before introducing the thumbs into the mouth, to defend them with a towel, or a piece of cloth wrapped round them. Seat the Patient when this dislocation is to be reduced.

* The bandage w^h passes under the Elbow & over
the Shoulder.

Clavicle. —

The Clavicle may be luxated at either extremity. When at the Sternum, the extremity of the bone is generally pressed directly outward, & forms a hard unnatural protuberance in the front of the Sternum. It is so thickly covered that the nature of the accident may easily be known in almost every instance.

Luxation of the Scapula Extremity

The end of the Clavicle is elevated above the Acromion Scapula, & may be reduced by elevating the arm. The shoulder is directly downward & inward. The weight of the arm pulls down the Scapula & the end of the Clavicle. The head is inclined to the affected side in luxations of either extremity of the Clavicle.

Treatment is exactly the same as in Fractures. The Apparatus already described is to be applied & continued for 2 mo^s. If it be taken off sooner, the motions of the arm will displace the bone again. The bandages are frequently to be examined as they are apt to stretch & slip in w^h case they must be reapplied. —

Cervical ven.



Cervical Vertebrae.

I have never seen a luxation of the Cervical Vertebra without a fracture of the Bone. Paralysis of the parts below takes place. On this luxation see Boyer on the Bones.

Os Humeri.

This is generally luxated downwards & inward. This is by far the most common but sometimes directly forward. Of this I have seen one instance only. In this case the head of the bone was at the edge of the Glenoid Cavity & Caracoid process of the Scapula. Sometimes it will be pulled by the muscle under the pectoral muscles. When downward & inward, the arm stands off from the Thorax & cannot be brought to it without great pain. By putting your fingers in the Axilla you will feel the round head of the bone. In all luxations of the Os Humeri, there is a hollow under the Acromion Scapula instead of the tumour which is formed by the head of the Os Humeri. The arm may sometimes be moved backwards & forwards, but never can perform a circular motion.

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Treatment. If called immediately, the surgeon can generally reduce the luxation himself without any assistance. I have frequently succeeded without any assistance. With the Palm of one hand applied to the Acromion Scapulae, I pushed it backwards for Counterextension, & the other hand on the Os Humeri just above the elbow joint for extension. The arm must be bent on the Os Humeri to relax the muscles, for if it were straight out, it w^d keep the long head of the Pectoris on the Sternum, & hence the reason for the bandage beginning at the wrist. In this way the surgeon will succeed in a majority of cases, if called very soon after the accident. An assistant may support the arm while the surgeon makes the extension & Counterextension.

The Reason why Surgeons have been unsuccessful is because they make their Counterextension on the body instead of the Scapula. The extending powers act on the upper extremity altogether. In this way they can't put the Shoulder joint much on the Stretch, & therefore can do little ser-



vice. For this reason the Counterextension is to be made against the Scapula, & extension on the Os Humeri. When the luxation is not recent: the above method will certainly fail. In this case a towel must be fastened on the arm just above the elbow joint by w^h 2 or 3 assistants may pull to make the extension, & the Surgeon places the palm of his hand on the Acromion Scapula. For the purpose of Counterextension, an assistant stands behind the Patient, & passes the fingers over the Acromion Scapula. Another Assistant stands before, & necessary & pushes against the Acromion, his fingers being placed over those of the first assistant & here I must remark, that the extending & counterextending powers must be exactly equal. While the extension & Counterextension are making, the Surgeon places one hand under the Axilla, it there acting as a Fulcrum, & with the other rotates the arm. When he has reason to believe the head of the Bone is dislodged from its unnatural situation, he suddenly draws the upper part of the Humerus outwards, & at the same instant



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places the fore arm by the side of the Thorax, or
pushes the arm down to the side, thus reducing the
luxation. As adhesions are contracted, & the Caps-
ular ligament is contracted in its dimensions,
force must be used. Besides, we have the contrac-
tion of the muscles to contend against. A question
here arises, & that is at what period after a luxa-
tion is it proper to attempt the reduction? Some
say not after 4 weeks. But this is certainly in-
correct. I have succeeded in 6, 7 or 8 weeks after
a luxation, & in one case 3 months after. A case
read of success after 6 moth. It is a point of the
greatest importance to make the Counterex-ten-
sion at the Acromion. If you do not the Scapula
will follow the arm, & by the extension, you
may employ as much force, as to tear it, together
with the arm from the Body without being able
to reduce the luxation. When much difficulty
occurs in reducing a dislocated Os Humeri, I
have found it useful to bleed till the patient
faints, & then it is very easy to replace the bone.

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A bandage is to be passed above the elbow & fixed
by a Tackle. The arm being bent. An assistant
draws the rope for extension on the shoulder joint

This is always preferable to much violence in extension. In a case in the Hospital of 3 weeks standing I succeeded very easily by follow^g this practice. In some cases where the head of the bone has been out of its natural situation for 6 or 7 weeks & has contracted adhesions to the surround^g soft parts, considerable force is necessary to tear these adhesions asunder. A bandage is first to be passed round the trunk to steady it, & also to fix the lower angle of the scapula if possible it is to be applied high up on the upper part of the chest.

To make the extension & counterextension, it is necessary to employ straps & pulleys. A strap is to be passed over the Acromion of the diseased side, & is to be fastened on the wall on the sound side opposite the Pelvis for counterextension. A girth over the shoulder, lined with Buckskin and stuffed with it is to be fastened to a staple in the floor. For the extension, place the hook of the pulley in the Tread already described. This cord may be lengthened if necessary. It is necessary



for some one to attend constantly to the strap at the Acromion if the patient be in a sitting position. This is an inconvenience, as the band for Counterextension will slip from the Acromion Scapula, & to remedy it a strap must be passed round it, & held down opposite the Acromion. When the head of the bone by means of this extension is moved out of the Axilla, the Surgeon breaks the adhesions by moving the arm upwards & downwards, & by pressing down the elbow. When the adhesions are broken the arm is to be suddenly pushed down. When sitting, the patient notwithstanding all his resolution will often fall down, & thus cause the bandage to slip - in this case he sh^d be laid on a mattrass or table, where he can't elude the extending powers, in this position the straps are to be fastened to the wall. I have succeeded in reducing the dislocation after the bone has been displaced 6 or 9 weeks. Contrary to the Opinion of the English & French Surgeons. I see no reason why we sh^d not attempt the re.



duction of this dislocation even after several months
have elapsed. They fear the obliteration of the Glenoid cavity. But if in an unnatural situation
the bone forms a kind of socket for itself, there is cer-
tainly much more reason to believe that in its
natural situation it will do the same thing. In
2 cases of old luxations, I have heard the adhe-
sions give way with a crack while rotating the
arm for the purpose of breaking them, during the
continuation of extension & counterextension.

Bones of the Elbow

Now & then a luxation takes place laterally. Some-
times the internal at others the external Condyl of
the Os Humeri. It can never take place forward
unless the Olecranon be broken off. It is generally
upward & backward.

Signs. The arm is half flexed, inability to bend
or extend it. Above the Condyl of the Os Humeri
you feel the hook of the Olecranon. The Coronoid
process of the Ulna is lodged in the pit of the



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Os Humeri naturally receives the Olecranon,
for this & the Os Humeri is the principal obsta-
cle to the reduction when there is a luxation lat-
erally of the external Condyle, you feel the round
head of the Radius & Olecranon opposite the ex-
ternal Condyle When the internal Condyle is lusa-
ted the Olecranon is near the internal Condyle, &
the head of the Radius is not felt where it ought to
be, opposite the external Condyle. If swelling oc-
curs no reduction sh^d be attempted until the in-
flammation is subdued Poyet says after 20
days dont attempt it, but this is highly erroneous
for I have completely succeeded after a month.

For the Counterextension. The assistant grasps
the arm just below the shoulder, another just above
the wrist makes the extension. While these are ma-
king, the surgeon locks his fingers in the bend of
the arm with his thumbs on the back part and
pushes directly outward. When the Coronoid pro-
cess is sufficiently dislodged suddenly bend the
arm & the dislocation is reduced Sometimes

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these bones are displaced laterally, here the same treatment is to be pursued. The arm is to be kept bent & supported by a splint. If the dislocation has continued for 2 or 3 weeks it is very difficult to reduce. If complicated with a fracture of the olecranon, it is necessary to keep the arm extended by a strong splint in its anterior part.

Luxations of the Radius at the wrist. These are generally forwards, seldom backwards. When forward, a protuberance is formed behind for the whole head of the Ulna constant for the position of the limb. The end of the Radius is more anterior than natural with semiflexion of the fore arm. The signs are nearly the reverse in a luxation backward. These luxations are generally easily reduced.

The Fingers

In general the first Phalanx passes behind the second. Sometimes it is difficult to reduce. Yet tension wont do move it in every direction.

Sprains occur most frequently at the wrist or ankle joints. A sprain is a forcible extension of either side of the capsular ligament, being partially ruptured by the head of the bone. It is almost a luxation - always attended with pain - known for luxation by the joint preserving its motion - Sometimes large swelling & ecchymosis from rupture of blood vessels.

Treatment - Immersion in cold water for 60 or 90 minutes, or pumping cold water on the parts.

If much swelling - remedies as for inflammation. Of the action of cold water is not easily explained, but I suppose that the vessels are small, & do not at first effuse all the blood - The cold stimulates the vessels to contract, stopping the effusion & permits the parts to come in contact again - After cold has been applied, the limb sh^d be bound up in soft linen, with vinegar or spirits, over wth a roller sh^d be passed, not too tight above the sprain - The wrist sh^d be kept free for motion by splints along the fore arm -

If great pain occur, an opiate may be given.

All the usual remedies for inflammation sh^d be used, & may be continued for 10 days or 2 weeks.

When the inflammation & pain goes off the patient

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Luxations of the Thigh bone
at the Hip joint. - The head of the bone is lodged in such a deep socket, & so well defended by soft parts, strong ligaments &c. that surgeons have supposed it impossible for a luxation to take place, & that fractures of the neck of the bone have been mistaken for luxations; but I believe there are 3 luxations for one fracture of this bone. One or two such cases occur every year in the Penn. Hospital. It may be luxated upward & backward, downward & forward, downward & backward, forward & upward, or directly forward. The first is most generally the case. The limb is considerably shortened 1 or 2 inches the bone is lodged on the Dorsum of the Humer. the toes are turned inward the Trochanter is higher up than natural, being near the Crista of the Humer. The patient is unable to move the thigh bone at the hip joint. There is some apparent motion for the Pelvis rolls on the sound Hip joint, & there is also apparent motion for the motion of the spine.

& his friends think nothing but weakness remains,
but the ligament is ruptured, the patient walks
about, inflammation returns, & confinement is once
more the consequence. —

In one case I actually saw suppuration super-
vene in consequence of it, Caries of the bone, Fletch
& death, as the patient w^d not suffer amputation.
All sprains deserve particular attention. —

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but it is easy to ascertain it. by fixing the Pel-
vis. It has been mistaken for a fracture of the
neck. but it may be distinguished when the
neck is fractured. by moderate extension & Coun-
terextension. the shortened limb may be made as
long as the sound one & will immediately be-
come shorter again when the extension is left
off. This is not the case in a luxation. The length
of the limb can only be restored by such a de-
gree of extension as completely reduces the luxation.
In luxations of the head of the thigh bone you ne-
ver feel any crepitation as in fracture.

The thigh bone may also be luxated down-
wards & forward, in w^h case the head of the Femur
is lodged in the Foramen Thyroideum. Next to the
luxation upward & backward this is the most fre-
quent. Some authors have thought that this is the only
direction in w^h the thigh bone can be luxated.
When this luxation happens the limb is some-
what longer than natural the foot is turned
outward & the surgeon is unable to turn it

* A firm strap is to be passed between the scro-
tum & thigh of the affected side & carried above
the head for the Counterextension. The extremity of
the strap may be fixed to a hook in the wall. A
couple of towels are next to be fixed just above the
knee, one on each side with a circular roller. -
These the assistants who make the extension pull
by. If a sufficient number cannot pull by tow-
els you may put ropes thro' them. If still greater
force be requisite hook the pulleys to the towels. By
the pulleys as much force can be exerted as can
ever be necessary. The patient lying on his side
near the edge of the table, while the extension &
counterextension are making, the Surgeon takes
hold of the leg at the ankle & bends it on the
thigh - he then rotates the bones till he has dis-
lodged the head of the Femur, & then it enters the
Acetabulum with a report almost always per-
ceptible. -

inward - great pain occurs at every attempt to do so. The leg is somewhat flexed on the thigh, fulness in the groin caused by the head of the bone. In thin people it may be plainly felt. -

The thigh bone may also be luxated upwards & forwards & directly forward - This last is extremely rare; when it does occur the limb is not shortened. When the luxation is upward & forward, the limb is a little shortened, & the foot is turned outward. -

When the luxation is downward & backward, the foot is turned inward, & the limb is of the same length. The luxation upward & backward is the most frequent I have seen of luxations of this kind & 2. downwards & backwards. The head of the bone is lodged in the Dorsa of the Gluteus. -

Treatment * Extension & Counterextension is to be made in the direction of the limb, & the limb is to be placed so as to allow the greatest possible relaxation to the Muscles. Place the Patient on a table & on his side. The thigh is to be bent on his body & the leg on the thigh. A strong



strong bandage must pass between the leg & over the groin, & rest on the tuberosity of the Ischium. The bandage for extension must be secured by a roller just above the knee if the Patient be too fat; below the knee on the leg. This bandage for extension must be held by 5 or 6 strong men.

The Bandage for counterextension is to be fixed by a hook in the wall above the head. First lay your bandage over the knee, & secure by a roller on the Os Femoris above the knee joint. If many people are requisite to make the extension, pass ropes by means of a Tackle to the end of this bandage. While extension & counterextension are making in the direction of the limb, rotate the thigh by moving the leg so as to dislodge the head of the bone, & raise it over the Crest of the Iliac Tabulum. Then you have nothing to contend with but the action of the muscles, & may be overcome by force. The Pelvis sh^d be fixed to the Table by a bandage over it passing thro' holes in the Table & fastened to the floor. To move,



simple method is to pass a bandage on the upper part of the thigh, & place y^e knee on the Crest of the Thim. The Patient must be always laid on the edge of the Table, for the injured limb being over the table, it is more easily come at, & you can give the rotatory motion in a better manner. This mode of treatment admits of general application in luxations of the Femur. For Dr. Physick's mode of treating a luxation forward & downwards see Desault p. 294. or 4th Number 1st Vol. Med. Museum. —

Sibia. — When this is luxated, the ligaments are so much lacerated that it is easily reduced. But they are so torn & lacerated that it is difficult to keep them in their situation. The long Splint of Desault sh^d be applied, & moderate extension made over the knee & leg by means of the splints. —



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Patella. - This luxation
is ^{on} one or the other side of the Os Femoris, & it
is pushed either on the external or internal
condyle of the Os Femoris. The first is the most
frequent, the leg cannot be bent, & the other
symptoms occur. The leg sh^d be kept extended
& the thigh bent on the pelvis to relax its mus-
cles, so as to put the Patella in its proper situation.

Told you that the bones of the leg were
sometimes luxated at the ankle joint, &
that this was generally accompanied with a
fracture of the Fibula. I once saw a luxation
of the ankle joint in a lady who received it
by going down stairs. The bones of the leg were
pushed forward & rested on the instep. One
assistant grasped the foot just above the ankle
joint, & pulled the foot forward while the bones of the leg
were pushed downwards towards the heel. She was un-
able to walk for 12 mo^s.

For further information on Dislocations & Fractures
see Boyer & Desault. —



Injuries of the Scalp. 111

When contusions are received for blows by an obduse body, the part feels soft & Puffy. The surrounding edges are hard, & the accident appears to an inexperienced Surgeon, as if the bones are fractured, & not only so, but as if the fractured part was driven into the brain. A young Surgeon w^d be apt to make an incision thro' the contused part into the bone. This however sh^d never be done, unless symptoms of compressed brain existed, as the Patient w^d suffer the pain of an Operation, probably exfoliation of the bone opposite to the contused part, a longer confinement to bed, & a tedious suppurating sore. For these reasons then, an incision sh^d never be made in the scalp, unless symptoms of compressed brain exist. I endeavour to avoid inflammation of the brain by applications of cold water or vinegar to the part, low diet & Antiphlogistic Remedies.

The Scalp is liable to all the different wounds. Incised wounds, are to be treated as wounds in other



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parts of the body, & so also are Contused wounds. But in addition to this we sometimes find the scalp much torn up for the part it covered. I have seen it torn from the Forehead to the Occiput in the direction of the Sagittal Suture. The scalp is sometimes torn from the Parietal Bones falls down & covers the ears on the side of the face. It was formerly advised by the older Physicians to cut away the whole portion of the scalp so torn, as they thought it would produce effoliation of the Bone &c. Their intention was also to prevent a confinement of matter. This practice is very absurd. If you are to clean the scalp of dust, hair & all extraneous matter, by means of a sponge & warm water, replace it in its proper situation, & keep it so by means of sutures or ad: plaster. When sutures are used, they sh^d not be close in contact as they will produce inflammation, Delirium & other alarming symptoms I have known the circulation to be interrupted and sloughing produced. The sutures sh^d be such.



approximated $\frac{1}{4}$ of an inch, & the knots sh^d not be firmly tied, but be slip or loose knots, for if tension sh^d occur it w^d then be easy to loose the knots. If an abscess sh^d occur, open it in the usual way. If exfoliation of bone exposed by an incision & extract the loose pieces thro' it.

When inflammattⁿ occurs after wounds, particularly the punctured, it spreads like Erysipelas all over the face arms &c. Fever & at times delirium ensue. When it occurs for a punctured wound dilatation will immediately subdue the symptoms. If this fail, the Antiphlogistic plan sh^d be pursued & if this does not succeed, a blister over the inflamed part of the scalp. When the Aponeurotic expansion is affected, I have known it to slough off before it was cured. It is at times difficult to ascertain whether the Delirium arises from inflammattⁿ within or without the Cranium, or whether from disease, external to the bone, or suppuration inside. This is easily determined by observing the state of the exterior dis-



case, for if large, it is quite sufficient to produce delirium, w^h consideration will prevent the Surgeon from laying bare or perforating the bone.

The second disease, for contusions or contused wounds of the scalp is formidable on acct^t of the extreme pain & distress w^h it occasions, & for its very long continuance. The part receiving the injury is affected with very great pain. A case of this kind came under my care in a Lady who received a blow from a window falling on her head. Every thing had been ineffectual. On shaving her hair I found no swelling, & not the least appearance of disease. I advised an incision w^h she consented to. I made a crucial incision in the painful part, w^h was as soon done. She became perfectly easy. Nothing is so effectual. A Lady who fell from a height received a blow in her head w^h occasioned a constant distressing pain, Pain, Opium, Arsenic, Blisters, Low diet, Mercury & Purging was tried without effect. I performed the crucial incision w^h gave her ease for a month.



& her pains then returned. I kept the wound open
 by applying lint between the edges, & by apply^g
 Cantharides. I advised her to have the portion
 of scalp where she felt the pain destroyed by can-
 "tic. ut" she consented to, but all with no avail.
 I have performed the Crucal incision without suc-
 cess. A man who by falling from a scaffold had
 received a contused wound of the scalp, was
 affected with this pain to such a degree that he
 could bear no one to walk across the room. I
 made with a scalpel a Crucal incision $1\frac{1}{2}$ inches
 long ut at that moment eased him, but in a
 few moments returned in the opposite part of the
 head. After waiting 2 days & finding the pain
 continue, I advised an incision there also, wh^{ch}
 he consenting to was perfectly cured. An incis-
 ion then thro' the painful part of the scalp is the
 only method, & if that fails a journey to the country.
 In time the pains will cease. A sea voyage cured it
 while at sea, but it returned on landing. The next
 accident produced by contused wound is this



Depressed Brain. The symptoms
are Stupor, drowsiness, loss of Speech, loss of the
power of voluntary motion. Sicknefs at the Stomach
Vomiting, & Hemorrhages from the ear & nose. It
may arise from two causes

1st From a fracture of the Cranium, depressed
below its natural level, & pressing on the Dura Ma-
ter & Brain

2^d It may be occasioned by an effusion of blood
from the ruptured vessels in the violence done
to the head - When occurs between the Cra-
nium & Dura Mater, or between the Dura &
Pia Mater, or the substance or ventricles of the
brain. When the affection occurs from effusions
of blood from ruptured vessels, these symptoms
seldom directly occur, not till after the expiration
of some time. These 2 causes are often com-
bined. A boy received a wound in the fore-
head. On examining the wound I found the
bone fractured, & actually driven in & pressing
upon the dura Mater. He was able to sit in a
chair & tell us he received the fracture from a



stone being thrown across the street. Directly af-
ter he had finished this relation, he fell down
& was seized with the symptoms of compressed
brain just related, as being senseless, Stere-
rous breathing, loss of voluntary motion &c. Ten
minutes had elapsed for the time he had re-
ceived the injury till these symptoms came on
Now it could not have arisen from the depression of
bone, it must have been caused by the effusion of
blood for the vessels at were ruptured at the
same time, & going on slowly afforded this in-
terval. The Cranium is sometimes fractured,
& the bone depressed while no symptoms of com-
pressed brain exist. I once saw the frontal bone
so pressed in that it was easy to lay the finger
in the depression. Yet these symptoms were ab-
sent. It is difficult to be accounted for, & can
be solved only in one way, & that is by sup-
posing the bone to be bent in opposite to the
longitudinal sinus, for had it pressed on the Dura
Mater, they must have been produced.



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The 3^d Species of injury attending wounds or Contusions of the Scalp, is when there is inflammation of the Brain or its membranes. It may be distinguished from Compression by never coming on directly after the injury 8 or 10 days elapse before the symptoms appear. & in one case they did not appear until the 6th week.

The Symptoms are restlessness, want of sleep, a frequent hard pulse, rigors Delirium Coma & Convulsions. It may be caused by simple contusions of the Scalp, or where there is a simple fracture, or a fracture accompanied with depression of Bone. When inflammation is about to come on from contusions of the Scalp, the part which has received the contusion becomes tumefied, soft, & puffy as if there was a fluid beneath. When an incision is made down to the bone, so as to lay it bare, the denuded cranium will be found changed to a white colour. However with the appearance of contused wounds of the Scalp may be, it ceases as soon as inflammation oc-



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curs. the granulations become flabby, & instead
of healthy pus, discharge a thin serous fluid, &
the Pericranium separates from the edges of the
wound. In contusions of the scalp however slight
they may be, warn the Patient against inflam-
mation within the Cranium, & prevent him from
exercise, at the same time using Antiphlogis-
tic remedies. If he complains of pain, Bleed
purge, & apply a blister to the injured side. If
this dont succeed, Rigors & Convulsions will en-
sue, & to prevent these, it becomes necessary to
perforate the Bone with a Trephine. In doing this
you will find the Dura Mater, & the pus on the
surface, which if it be exterior, is a fortunate circum-
stance. But at times it is interior between the
Pia Mater which will cause death. When
contusions produce suppuration between the
Pia & Dura Mater, the blow is felt thro' the
bone by these membranes, irritating them to
inflammation & suppuration. When from the
Symptoms of compressed brain you think there
is matter on the surface of the Brain, perfora-
tion



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tion of the bone becomes necessary, for raising up the depressed portion of it, letting out the effused blood, & if there be inflammation for suffering the Pus to escape, as it may otherwise make its way into the brain. Contusions sometimes take place where there is no mark to show the injured spot. In this case it has been advised to perforate the bone by guess. I sh^d much rather depend on other means, such as ice cloths, or cloths wrung out of cold water. Bleed^g from the arm, keeping the patient perfectly still & quiet & thus endeavouring to abate the hemorrhage from the ruptured vessels.

Instruments. A strong Scalpel 2 Trephines, an Elevator, a Tooth Pick, & W. Heys saw very convenient. First shave the hair from the head to be able to make the incision and for this purpose a strong Scalpel is first wanted. With that portion of it wh^{ch} projects beyond the handle you are to scrape the Pericranium. A Raspatory was formerly used, but a strong Scalpel with the back projecting thro' the handle is



preferable. A Perforator was formerly used to fix the center pin of the Trephine, but if this last instrument be properly made, the Perforator is useless. The next instrument is a Trephine with a circular saw having the central pin moveable, & the saw being a portion of a cylinder. The stem is made hollow in wth the center pin prevails, & may be drawn up to any height, or made to project beyond the teeth of the saw. Two Trephines exactly of the same size sh^d be at hand, that one may be clearing while the other is using. When the groove is formed you may move y^r center pin, & retract it as soon as it gets a little deep, for if you were to leave it projected, you w^d perforate the bone & probably the Dura Mater. The Elevator is the next thing wanted, w^{ch} is a simple lever. A pair of forceps to pull out pieces of bone wth some surgeons use is of no service. The Lenticular w^{ch} is employed to take off sharp edges of bone is useless, for the elevator will answer as well. A Toothpick is also necessary to ascertain



the depth of the perforation

Operation. First expose the bone to ascertain the nature of the Fracture. At times there is a wound but in other cases there is none, or but a very small one, in which case an incision is to be made thro' the scalp down to the bone. When a fracture exists, I need not tell you that great caution is necessary in making this incision, for if much force be used, the knife may go down thro' the fragment to the Dura Mater. After you have denuded the bone the pin of the Trephine is to be projected beyond the saw, & screwed in that situation. It sh^d always be placed on a solid piece of bone, never on a depressed fragment. But as near it as you safely can. As soon as you have made a groove deep enough to confine the saw in one place, retract the pin. You sh^d after examine with the tooth pick the groove made by the saw, so that you may tell if the saw has got into the groove. Without this precaution there is also danger of puncturing the Dura Mater. You sh^d



15.
never saw thro' the internal table of the skull,
but just so as to get at it, for it yields easily to
the Elevator. The pieces of Bone sh^d be removed
by the Elevator, also any portion of skull w^h may
be loose. The skull sh^d then be raised to its natu-
ral level, & the effused blood gain admittance.
The effused blood at times does not exist between
the Dura Mater & skull, but between the Dura
& Pia Mater, in w^h a perforation with a lancet
is to be made thro' the Dura Mater. This is highly
dangerous, all the cases w^h I have seen proved
fatal by inflammatⁿ & suppuration. We
have known recoveries from punctures of the Dura
Mater by accident. It appears strange that
art sh^d be unsuccessful. We know when the Dura
Mater is injured by its under part being of a
darker colour than Natural, by its feeling very
tense instead of soft & flabby, by its being a con-
vex instead of a plane surface & by the pulsation
of its Arteries, & its alternate rising & falling. It
rises on expiration & falls during inspiration. It



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is often proper to delay the Operation, for cold applications & Ice have produced absorption. Mr. Keys saw to remove depressed portions of Bone & saw them out is a very convenient instrument & may answer for a Trephine. The symptoms are a wild look, watchfulness, hard pulse, fever inclination to vomit & a debility of the understanding. Cold applications often succeed, if not, a blister over the part, & if that fail Mercury with a view to salivate. It was used in our Hospital by Dr. Rush in 1795 or 96.

Dressing the Wound. It is very customary to apply dry lint over the Dura Mater & Pericranium it is certainly very light, but it has one great inconvenience which is that the blood coagulating with the Sympst sticks close to the wound, & when for the symptoms which take place it becomes necessary to examine the Dura Mater, we are unable to remove the lint without producing very great pain & irritation. A soft bread & milk poultice sits easily & is easily



removed. It was customary to leave the edges of the divided scalp open, but lately the edges have been drawn together by sutures, as when the bone is injured, much suffering is prevented & the cure is sooner effected. I have often treated it in this manner after the operation of Trepanning & have been pleased with the result. When the scalp is open, there is an exfoliation of the denuded cranium - granulations will arise, & these must cicatrize w^h renders it a tedious process. There are inconveniences however in drawing the edges close, for it is impossible to see the Dura Mater. There after the operation of Trepanning, & the elevation of all the depressed portions of bone, I find the Dura Mater sound, I draw the edges of the divided scalp together, either by sutures or what is still better adhesive plaister, & tying the sutures if they are used, with bow or slip knots. When blood exists under the Dura Mater, or the evacuation of blood continues, I never



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draw the edges of the scalp close over the perforated bone, but leave a wide opening for the evacuation of matter. After the Operation it is necessary to pay great attention to the Patient, as inflammation of the Brain itself sometimes occurs. He sh^d be kept to a low diet, avoiding Animal food & every thing Spirituous, be confined to a dark chamber, & perfectly at rest. If fever come on most copious Bleef sh^d be used. Nothing requires the lancet to be pushed to so great an extent. I have bled 4 or 5 times in one day. - When the effusion is between the Dura & Pia Matters, this is particularly necessary. A Boy who had a fracture & a depression of bone, was completely recovered by the Operation. As soon as the bone was elevated he was restored to his perfect senses for a state of insensibility & continued so for 2 or 3 Months. After this time febrile symptoms appeared, pain, a tense & hard pulse with irritation & delirium also. The Dura Mater was elevated into a conical form at the Cot-



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low of the perforation. ~~Thus~~, & the upper & middle surface of the Dura Mater was on a level with the external table of the skull. It appears now being like the effects of a blister. By these symptoms I supposed that inflammation of the Brain had taken place, & by the remedies just mentioned the swelling was reduced. The surface at the bottom of the perforation receded to a plane & the Boy recovered. I mention this case because some surgeons w^d have made a perforation to let out the effused fluid. A Blister over the Head is an excellent remedy.

I mentioned that violence was done to the head & the functions disordered when there was no mark to guide us in the application of the Trephine. These are called

Concussions Bleeding, the Antiphlogistic plan, & a blister over the font. sh^d be used until a copious suppuration is produced on the exterior part of the scalp. Bell advises in concussion of the Brain the use of stimulating applications. This is a pernicious practice. The use



of wine, Vol: Alk: & Opium as he recommends
must increase the effusion. -

There are several places where the Ancients
deemed it improper to apply the Trephine, as
over the Sutures, Temporal & Occipital bones, &
Frontal Sinuses. But whenever it is necessary,
there is no reason for paying any regard to the
place. I have operated on all parts. Their rea-
sons for not applying the Trephine over the Su-
tures, were that the Dura Mater adhered more
firmly to the Bone at that place. There were more
risks passing to & from the Bone, & they feared in-
flammation. There was also a large sinus, & they
were afraid of opening large Bloodvessels. I have
operated over the longitudinal Sinus, & the he-
morrhage was easily stop'd by a Dopst. of lint.

They avoided operating on the Temporal Bone,
because the temporal Muscle lay there, & they
expected if that was wounded, locked jaw w^d en-
sue. I have laid bare the squamous portion of
the Temporal Bone, & the Patient was unable to



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open his mouth, but yet this was very different from the locked jaw, & it went off in a few days. It was merely the inflamed state of the muscle which prevented its elongation, & it went off without any application.

They would not operate on the Occipital bone because it was so uneven, & for the same reason, that they were afraid of the Longitudinal Sinus



Diseases of the Eyes

These may be divided into those of the Eyelids, of the Tunica Albuginea & of the substance of the eye.

When the eyelids are inflamed they are of a scarlet colour, the cellular membrane is loaded with extravasated serum, & as to close the lids, little pain occurs. The inflammation of the Eyelids generally, comes on suddenly in the night.

Remedies. If any fever exists. Rest for the eye will be necessary. In general low diet & a mercurial purge will remove it. Brandy or Camphorated Spirits sh^d be applied. —

If inflammation of the Tunica ad. Tota & of the lachrymal glands takes place, small ulcerations discharge viscid purulent matter w^h glues the eyelids together in the morning. I think this disease consists in inflammation of the very small glands, w^h are situated at the roots of the hair forming the Cilia or Eyelashes. Spermacei oil, Ung. Citium sh^d be inserted between the eyelids ev



every night & morning. & Tar Ointment in-
jected between the Eyelids at night. The Tar
Ointment I have found particularly efficacious
in 3 inflammations of the Conjunctiva & Cornea.
These membranes naturally white, becomes red in
consequence of inflammatⁿ forcing red blood into
their vessels. The eye waters very much, light is of-
fensive to it. The Pain is of the hot & burning
kind. Sometimes the inflammatⁿ exists in the
Angle, a spot near the edge of the Cornea especially
in children. The child closes its eyes & bends its
body to screen them from the light, or covers it with
its hand. The inflammation often extends over
the Cornea, inducing redness & Opacity, w^h un-
less soon cured, leaves a film. The part between
the Cornea & internal Canthus is most frequently
affected. The Causes are

1st The disease called Trachias

2^d External Violence.

3^d Acid substances getting in, as Lime, Smoke, Acids &c.

4th Too much exercise of the eye on small objects

5th Cold

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6 Frequent intoxication
7th Small Pox Measles &c
8th Excess of light

9th I have known inflammatⁿ of the eye induced in 2 instances by washing them with urine. One case ended in Opacity of the Cornea & loss of sight. It sometimes comes on without any evident exciting cause. —

Inflammatⁿ of the Globe of the Eye.
This takes place either Anterior or Posterior to the Crystalline Lens. Symptoms. Shooting pain, great sensibility to light. When the inflammatⁿ is in the Anterior Chamber, it often ends in suppuration, & the pus may in some instances be absorbed, at other times an incision is necessary to let it out. When the inflammatⁿ is behind the Crystalline Lens, the pain is intolerable, & all the symptoms are more violent. There is often a total suppression of the powers of vision. Delirium follows & sometimes death. To prevent the continuance of the inflammatⁿ, remove the exciting causes & extraneous substances. Sand

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or pieces of them may be wiped off with a rag, or washed out with injections of milk & water. If these methods fail, invert the eyelid, & then you may very generally find & remove the extraneous body.

Trichiasis or the Cilia turning inwards irritating the Globe of the eye is of 2 kinds.

1st From the Cilia growing in a wrong direction

2^d From contraction of the Tenuea Conjunctiva at the inner. In this last case it is proper to divide the contracted conjunctiva. In the first Lunar Caustic has been recommended, but this does not succeed. It is very difficult to cure. I think I sh^d be tempted in a very obstinate case of this kind to dissect out that part from which the Cilia originate & grow.

The Remedies to remove inflammation of the eyes are 1st V. S. This is the principal remedy & is to be regulated by the violence of the inflammation. If it still continues after you have drawn as much blood from the arm as you judge.

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the constitution of the Patient will bear, you may notwithstanding use local V. with advantage. Cauterize the temples Leeches 30 or 40 of them - dividing the tinged vessels of the Adnata with the shoulder of a Carrect, or by raising them up with a hook & dividing them with sharp scissors. Surges, particularly the mercurial are very useful, also low diet. The mildest applications to the eye during inflammation as a bread and milk poultice not of popine. by its weight has done good Also a piece of the Crumb of bread sewed up in a piece of gauze & kept in rose water. An infusion of the juice of Asparagus is an excellent application. When inflammation is a little moderated a good Collyrium is the follow^g.

R. Acet. Plumbi	---	5 grs	
Sulphate of Zinc	---	3 grs	
Tinct. Opie		℥ss	
Acetic Acid	---	℥ij	
Aqua Rosa	---	℥viij.	This

Collyrium does harm if used in the height of in-

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Inflammation. Blisters sh^d also be employed. When all these remedies fail, a salivation sh^d be had recourse to. Even when matter is formed in the anterior chamber of the eye, the above remedies with the strictest Antiphlogistic treatment has caused it to be absorbed. If they fail in doing this & the abscess is likely to make an opening for itself by ulceration anteriorly, it then becomes necessary to open it. This is done exactly in the same way as for the extraction of a Cataract. In inflammation of the eyes, confine the Patient in a dark chamber, restrict him to vegetable diet & by no means permit him to use fermented or distilled liquors. To prevent a recurrence of the inflammation if pus in the ear, or a seton in the back of the neck is very useful.

Unguis A thickening of the Conjunctiva at a particular part sh^d be dissected off, or it produces Opacity, & partial or total opacity of the Cornea from a continuance of the inflammation. If any part of the Cornea remains transparent, from



an Artificial pupil directly opposite to the Trans-
parency. This has prevented total Blindness.
Sometimes Tar Water is a very useful applica-
tion in inflammations of the eye in one case. I
cured a patient who had lost 750 $\frac{3}{4}$ of blood,
had been purged almost every day, had his eyes
scarified frequently & had undergone a saliva-
tion without relief. I do not now speak for ex-
perience but I think the Tar water w^d be an im-
proper application when the inflammation is very
active or when fever exists. -

Sistula Lacrymalis.

A perfect knowledge of the Anatomy of the eye
& its appendages, is here necessary. The tears are se-
creted by a gland in the eye w^h are absorbed by
the 2 ducts called Puncta Lacrymalia, that
open into the Lacrymal sac & nose. The Ductus
ad Nasum thro' w^h the tears flow out of the
Lacrymal sac into the nose, is liable to obstructions
& stricture. When this is the case the Puncta Lacry-
malis continue to convey tears into the sac w^h be-
come preternaturally distended forming a swelling

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in the inner Canthus of the eye. Pressure causes the
tears to flow out of the sac over the eye, & in
the early stage into the nose. If this pressure be increa-
sed, a thick mucus comes out. At this time there
is no pain & the eyelids are glued together. A
mild contact between them sh^d be used, & prevent
the accumulation of tears in the sac by pressing
them out from time to time. When inflammation is
excited in the sac either by cold, or in any other way,
fever comes on & the parts are tender & painful
press on it now & then to keep it empty. If the in-
flammation be very violent, remove it by V. S. If
suppuration takes place, open the sac with a lan-
cet. In some cases we are not counselled till
there is an opening thro' the sac discharging the
contents of the tumour, pus, or something serous.
Oiling mucus over the eye. here dilate the opening
after the sac is dilated endeavour to introduce a
probe into the Nasal duct. The Bougie or probe
sh^d remain in until it passes in very freely.
If it be practicable it may be sufficiently dilated
for the tears to pass thro' by pieces of bougie. In

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some cases it is so impervious that nothing can pass in it arises from the passage being stopped by a depression of the *Os Unguis*. When there is an opening made you may pass a probe from the *Ductus ad Nasum* towards the nose but the stricture will prevent its entering. When there is no opening, one is to be made by an incision beginning below the junction of the Palpebrae to avoid the *orbicularis palpebrarum* muscle. & then you are sure to cut down into the Lachrymal sac. A silver pin of the size of a probe, with the head like that of a common iron nail it may be covered with court plaster sh^d be kept in the duct for a considerable time to prevent its becoming again impervious. This pin is recommended by Mr. Ware. On withdrawing it, the wound in the sac readily heals. In making an incision into the sac, commence a little below the tendon of the *orbicularis* muscle, & continue thro' the centre of the tumour. If upon opening the sac, you find the *Ductus ad Nasum* wholly impervious, or that

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The obstruction is so considerable that you can't
pass any thing thro', the bone enlarging & shut-
ting up the Cavity, it then becomes necessary to
make an Artificial communication for the air
to the nose. by perforating the Os Unguis. This oper-
ation is best performed by introducing a piece of
Linen high enough up the nostrils to the opposite
the part you wish to perforate. The perforation is
to be made with an instrument exactly like the
common punch, invented by Mr Hunter. This
instrument is as sharp as it sh^d be completely
removes a circular piece of the Os Unguis. In ap-
plying it take care to put its edge completely within
the posterior part of the Nasal process of the superior
maxillary bone. if you apply it on this process, you
may work for an hour or two without getting it
into the nose. Confine the instrument to the Os
Unguis. Mr Poll's curved Trepan is now laid
aside, as it breaks the bone into several pieces and
not removing a circular portion, the bones are often
united again, leaving no opening for the air to



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the cavity of the nose. Another objection also is, that the wound is obliged to be kept open. Attell a French writer recommends small probes, & syringes to wash out the sac. These are not at all used. Sometimes when upon opening the sac you will find a fungous or Carious bone. The fungous is to be destroyed by the common remedies & the Carious bones if there be any, when loosened are to be extracted.

Cataract.

By this term is meant an Opacity of the Crystalline lens or its Capsule. It shows itself in round spots & behind the pupil of a white, grey or dark colour. When it is coming on the Patient has a sensation of a mist before his eyes, & of threads hanging over them. In the end it often produces insensibility of the Pupil to light, & total Blindness. Sometimes, (I think especially in women) it comes on with pain, & a sensation of weight over the eyes. Only one eye is commonly affected in the first instance, but in time the other generally becomes affected. Persons advanced in life are most liable.

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to be affected by it. Occasionally however it at-
tacks persons of all ages. I have known children to
be born with it. When the disease arises from me-
chanical injury, it has been removed by Bleeding,
low diet & blisters. But when from an internal
cause, I believe nothing but an operation will re-
move it. Mercury Picota, Issues &c have been
tried. I have known it in some instances absor-
bed by the powers of Nature, & thus removed with-
out any assistance. —

The Operations proposed for restoration of vis-
ion are two. One consists in pushing the Opaque
Crystalline lens from its natural situation to the
bottom of the eye, & is called Couching, the
other making an incision into the Cornea thro'
w^h the opaque Crystalline lens is extracted called
Extraction. Extraction is preferable to couch-
ing for many reasons —

1st It is not so painful. Here the case of one eye
couched & the other extracted

2^d It is a much more complete operation, it re-



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ner being necessary to repeat it. When the Cata-
ract is depressed, the lens is very apt to rise again,
& resume its former situation requiring repetitions
of the operation. In some instances the vitreous hu-
mour is so fluid as to allow the lens to be moved
about in it after being depressed, but this has
never happened in any case I have seen.

3^d When the lens is fluid, it is impossible to de-
press it with the couching needle. But it has
been said that upon rupturing its capsule, it
will mix with the vitreous humour, & may be
absorbed. In some cases this may happen. I have
sometimes found the lens only partially fluid, &
the fluid might be absorbed, but the solid w^d
remain in situ obstructing vision as before.

4th When the Capsule as well as the lens is
opaque, that it can't be depressed with a needle,
when the lens is extracted you may extract the
Capsule afterwards with a Forceps.

5th When adhesions exist between the Capsule
of the lens & iris, there is great risque of tearing
it away from its attachment & carrying it along.



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with the Iris to the bottom of the eye, thus producing
blindness if the operation of Couching be performed

It appears, then that Couching is not applicable
to every case, but extraction is

The principal Objections that have been urged
against extraction are

1st That forcing the Cataract thro' the Pupil, it
produces in that opening, raggedness & irregularity
This rarely happens, & when it does, it does not im-
pede vision.

2^d It is said Vicatrules for a section of the Cor-
nea will be so large, as to induce considerable opa-
city of the Cornea. If the incision be made with a
sharp knife & at one stroke, & it always sh^d be,
the opacity remaining will be so small, that a
Stranger can't tell w^h eye was operated on, besides
if any opacity sh^d remain, it w^d be so near the
Sclerotica, that it will not be likely to impede
vision.

3^d It is said there is great danger in extraction
if the Vitreous humour be evacuated. This Chap-
ter for the great pressure on the eye, & will not often



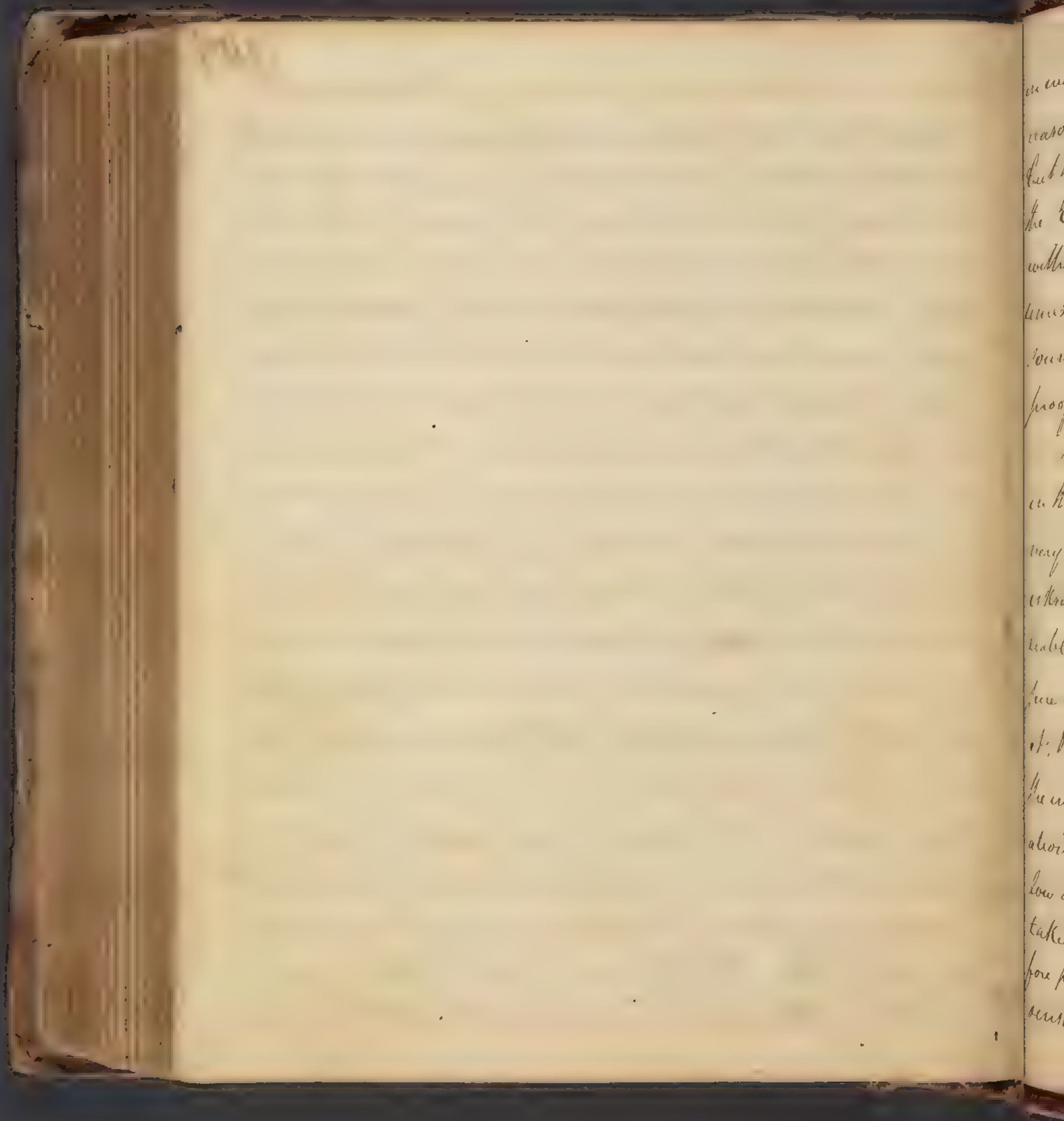
occur to a person qualified to perform the operation. But if a portion of it be evacuated, no bad consequence results. In one case where $\frac{1}{3}$ of the vitreous humour was evacuated, recovery was more rapid & vision as perfect as ever. —

If it is objected to the operation of extraction, that in performing the section of the Cornea, a portion of the Iris is also liable to be cut. This cannot always be avoided. If any part of the Iris gets entangled on the knife, it can be seen, & is easily disentangled by rubbing the Cornea with the end of the finger. Before patients will submit to the operation, you will generally find it necessary to predict what the probable event will be. If the eye be perfectly healthy & not subject to inflammation, if it be sensible to the Light; the pupil contracting & dilating accord^g to the degree of light, if the patient can readily distinguish day from night, if his general health be good & eyelids free from inflammation or Oedema, you may venture to give a favourable opinion of.

* I have found pressure on the upper lip to prevent
sneezing

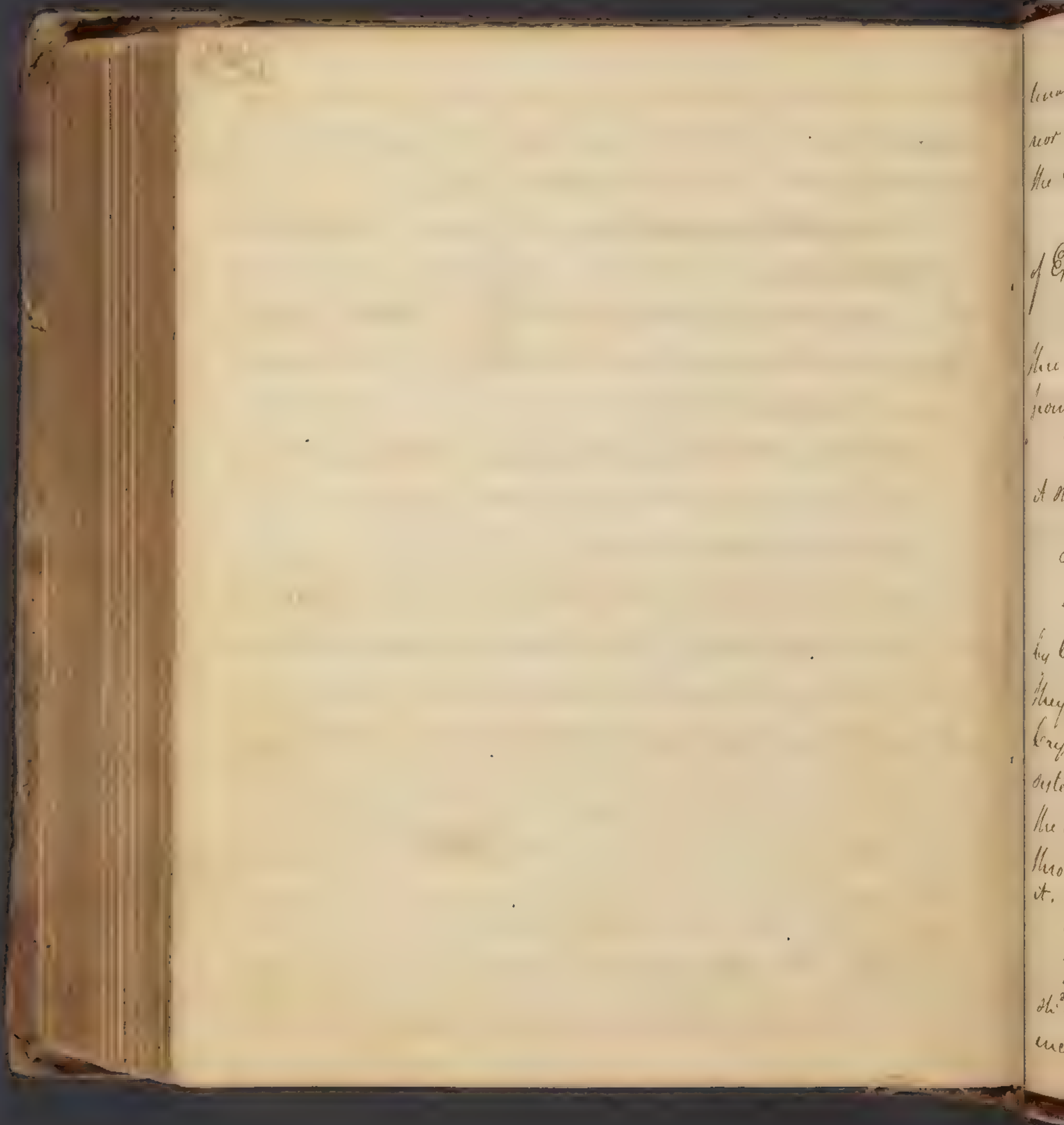
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the event of the case. But if on the contrary, the patient has pains in the head is subject to inflammⁿ of his eyes, if the eyelids be Ode-
matus, if the patients general health be bad, if he be troubled with cough, or very subject to vom-
iting or sneezing. The convulsive motion of vomit-
ing sneezing or coughing may after the operation
is performed, force out the humours of the eye, or
rupture the blood vessels of the iris. A case occurred in
wh^{ch} this actually happened, one of the vessels of
the Iris was ruptured by a fit of Coughing, & a
small drop of blood extravasated in the Iris. This
irritated the eye & caused it to suppurate, thus
rendering the operation abortive. Previous to pro-
ceeding to the operation, if the patient have pains
in the head, it sh^d be relieved. This I have done
by Purges 2 doses of salts a week for some time.
If there be inflammⁿ remove it first by the
usual remedies. If the Eyelids be Oedematous,
blisters to the back of the neck are recommended.
The Pupil being immovable & of the same size



in every degree of light has been tho't a sufficient reason for not performing the operation at all. But this sh^d not prevent it in every instance, for the Retina is sometimes in a sound state. Notwithstanding on the other hand the pupil sometimes contracts & dilates when the Retina is unsound. Free motion of the pupil is not a certain proof that the Retina is sound.

The best time for performing the operation is in the temperate seasons of Spring & Fall. In very hot weather, confinement to bed will be very unkind to a patient; & in winter he will be very liable to take cold w^{ch} will in all probability enflame the eye in some way or other by inflaming it, & by the cough that attends. In order to render the inflammation subsequent to performing the operation as mild as possible, confine the patient to low diet for some days previous to performing it; take away some blood from the arm, & the day before prescribe a Cathartic. When the Pupil is insensible to the different degrees of light; the Re-



lens sound. It arises from adhesions of the Posterior surface of the Iris to the Anterior surface of the Capsule of the Crystalline lens.

Instruments necessary in the operation of Extraction.

1st A Knife. One of its edges sh^d be sharp. Thus its whole extent, the other to the $\frac{1}{8}$ of an inch from its point.

2^d A Needle, on the handle of wh^{ch} is a scoop, & it sh^d be a little curved at its point.

3^d A small hook

4th A small pair of Forceps. These sh^d touch by broad surfaces. If they touch by points only, they w^d only tear a small bit of the Capsule of the Crystalline lens. If the Cataract be of firm consistence, or sh^d fall down behind the pupil to the bottom of the eye. Then they must be passed thro' the pupil in the Crystalline lens to extract it.

5th A sharp fine pointed pair of Scissors.

The Knife recommended by Baron Wauwels, & sh^d be used, it sh^d be very sharp. It is about an $\frac{1}{8}$ inch on its back it sh^d also be sharp, that the



instrument maker may give the knife a very perfect & sharp point. The thickness sh^d gradually increase from the point to the handle, that it may by acting as a wedge at the time of making the incision prevent the escape of the aqueous humour. The widest part of the blade sh^d be equal to half the diameter of the Cornea.

Needle. This is to rupture the Capsule of the lens. The point sh^d be a little bent. The scoop on its handle is for the purpose of removing any detached portions of the opaque Capsule & after the lens is extracted.

Hook This is necessary when the lens has power to fall deep in the eye after incision in the Cornea is made.

Small Forceps to remove the Capsule of the Crystalline lens when opaque.

Scissors These sh^d be very sharp & fine pointed. It is necessary to have these in case the section is not complete as by them you may easily make it so. Previous to proceeding to the operation it is proper to put a bandage round the

The skin of the upper eyelid is to be folded on the upper Sarcularny ridge, & the assistant also with his finger just under the Tarsus makes moderate compression on the Eye ball. —

The point of the knife is to be placed upon the Cornea $\frac{1}{12}$ of an inch from the Sclerotica I say upon it, for it is not to be punctured until the eye gets fixed. The point of the knife is to be pushed out exactly opposite the point it entered so as to make a semi circular Section. —

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Patient's head with 2 Compresses hanging to it
one over each eye to be operated upon, turn them up
out of the way. It is also convenient to have
another compress & a piece of roller at hand

Operation. In proceeding to the opera-
tion the Surgeon sh^d be seated on a high chair,
the Patient is in one much lower just before him.
The Patient sh^d not face the window as the light
w^l be reflected from the Cornea to the pupil. An
assistant sh^d be behind the Patient to support his
head. To expose the eye completely the Surgeon ex-
verts the upper eyelid wth the assistant fixes with
his finger. The Surgeon himself draws down
the under eyelid, & at the same time holds the
knife ready in his other hand. If the right eye
is to be operated upon use the left hand & vice versa
As soon as the eye becomes fixed, as it invariably
does for a moment. Shortly after being thus fixed
apply the point of the knife very near the Sclero-
tica to the centre of the Cornea, & in a moment af-
ter when the surprise to the eye occasioned by
this application ceases pass the knife slowly cut.



steadily across the Cornea. It will cut itself out
never draw it back when once introduced. If any
part of the Iris is in danger of being wounded dis-
engage it by rubbing the Cornea with the end of
the finger. As soon as the Section of the Cornea is
made, be very careful to make no pressure on the
eye. The assistant sh^d let go the upper eyelid, the
Surgeon the lower. When this is done the Patient
immediately closes the eye. After resting a mi-
nute or two, that the eye may recover fr^{om} the fa-
tigue it has undergone open it again. Introduce
the needle thro' the section of the Cornea & thro'
the Pupil. Tear the Capsule of the Lens by mo-
ving the handle in every direction. Having
sufficiently torn the Capsule, withdraw the nee-
dle & make gentle gradual pressure. This will
cause the Lens to protrude anterior to the iris & it
may be extracted with the hook. If any portion of
the opaque matter remain, extract it with a scoop,
& if it fail, with a forceps. The Eyelids are next to
be closed & a compress applied over it. Retain this
with a roller & the operation is Completed.

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Specula are inconvenient & not necessary for performing this operation.

Couching is much more simple. The Needle for couching sh^d be round with a flattened point, & that a little curved. After fixing the eye with a Speculum, pass the needle into the Sclerotica $\frac{1}{2}$ of an inch from the Cornea & carry it behind the Iris before the Crystalline lens. When the point gets directly below the lens, it is to be depressed by elevating the handle of the needle. I have tho't one powerful reason why some Surgeons so strenuously advocate Couching, is because it is so much easier performed than Extraction.

Blindness is sometimes produced by a contraction & closure of the Pupil, or by Specks or opacity of the Cornea before the Pupil. The effect viz Blindness, is the same in both cases, as the transmissi^{on} of the rays of light to the Bottom of the eye or Retina is prevented. When there is no opacity of the Cornea; but the pupil is contracted & closed, cut a pupil where it ought na.

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naturally to be. This is done with the same knife
used in extracting the Cataract. Having pierced
the Cornea as in the operation of extraction, before
carrying the knife across the eye to the other side
of the Cornea, elevate its handle so as to let its
point dip down, & pierce the iris where you wish
to form the Artificial Pupil. The little Flap of
Iris w^h remains is to be slipped off with a
pair of very small Scissors curved at the point
When the pupil is of its natural size, & the opa-
city of the Cornea exists over it preventing the
transmission of the rays of light. In this case
also an Artificial pupil sh^d be cut opposite
to the transparent part of the Cornea. To do
this having pierced the Cornea with the knife,
retract it a little & let some part of the aqueous
humour escape. By doing this, part of the Iris
will fold over the knife, w^h fold is to be cut off
with the same stroke of the knife w^h makes
the section of the Cornea. When in this way,
the Iris folds over the knife, there is no danger
of wounding the Crystalline lens or its Capsule



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from the most unpleasant consequences
might result, as Cataract from Opacity of the Lens
or its Capsule. —

Some Surgeons are so much afraid of Cata-
ract succeeding this operation, that in every
instance after cutting the Artificial pupil, they
proceed immediately to the Operation of Extrac-
ting the Lens. This can never be necessary when
the pupil is cut in the way we have recommended.

This operation will sometimes succeed com-
pletely, what we have most to fear is the Con-
sequent inflammatⁿ which may defeat all
our expectations even when performed in the
most skilful manner. This circumstance
sh^d be kept in view in giving your Prog-
nosis previous to the operation. —

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Jesuta Lachrymales

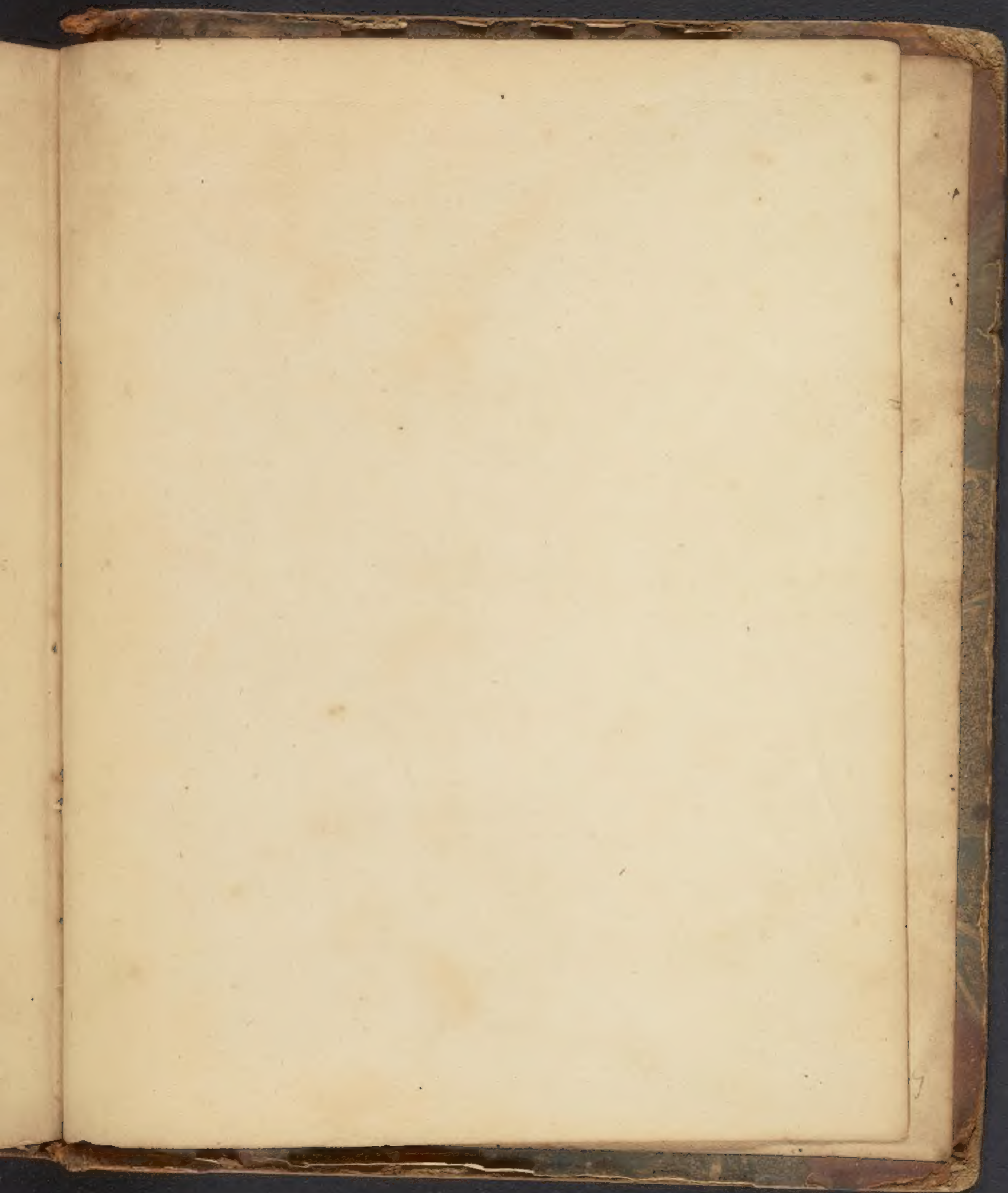
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Cataract — — — — —

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